The Builder.

VOL. XIV.—No. 709.

SOMERSETSHIRE is so rich in churches and Mediæval and Elizabethan mansions, that the members of the *British Archæological Association*, during their recent congress, held first in Bridgwater, and afterwards in Bath, have found the excursions full of interest. Somerset is the county of noble towers. Apart from the great churches of Bristol and Bath, St. Mary's at Taunton, St. Mary's North Petherton, the church of Huish Episcopi, Wrington church, Yatton church, Chewton-Mendip church, St. Cuthbert's at Wells, and others, possess towers of unrivalled magnificence and beauty. Representations of many of these will be found in Mr. Wickes's admirable "Towers and Spires," and will well repay study.

A ride through the county is made particularly interesting by this prevalence of towers: the earthworks, too, are not few: the hedgerows are full; and the hills are covered with foliage. All these make a journey in this neighbourhood more than usually pleasing, and the pleasure is increased by the connection between the locality and events in the early history of the country, more particularly with Alfred the Great and his defeat of the Danes. It was on the Isle of Athelney, within a few miles of Bridgwater, that Alfred, leading a troubled life, as Asserius writes, in the forests and marshes of Summurtune county, took up his abode in the cottage of one of his cow-herds, and let the cakes burn. Here, some time after, he made a stronghold, and, with the men of Somersetshire and Wiltshire, ultimately defeated the Pagans, and forced them to leave the country; their king, Godrum, or Gurthrum, agreeing to become a Christian and receive baptism. This ceremony was performed a few weeks after the battle; Alfred acting as his godfather, at the church of Aller, close by. The decisive battle was fought at a place then called Ethandune, or Edendune, and has been claimed for Edington, in Wiltshire. During the meeting of the Association in Bridgwater, Mr. Gabriel Poole, a local antiquary, in an interesting paper, made out a very strong case for a place called Eddington, in Somersetshire, about six miles east of Bridgwater, and which certainly seems to accord better with the account left by Asserius than the Edington in Wiltshire. Mr. Poole said, justly, that as the great events referred to had been mainly brought about by the valour of the men of Somerset, he felt that, as their descendants, they ought, on such an occasion as this, to bring to mind the great deeds of their forefathers; and that, if these events took place in the neighbourhood of Bridgwater, they ought not to allow themselves to be deprived of the honour of calling them their own, unless some other county could show a better right to them.

Bridgwater, where the meeting we are speaking of took place, is situated on the river Parret, about six miles from its mouth. It is an ancient town, though most of the evidences have been removed, and is peculiar as the only place in the kingdom where the well-known bricks for scouring purposes, known as Bath bricks, are made. Why they have this name is not known. It would seem that a mixture of sand from the sea with the alluvial deposit of the river, is here formed naturally, to the extent of about half a mile above the town bridge, and half a mile below it. The works are situated on the banks of the river, so that the sediment is taken at once to them, and being dried and formed into shape, is then burnt in kilns hard by. The manufacture employs from 4,000 to 5,000 hands.

There was a large castle in Bridgwater anciently: its site is now occupied by King-square. A drawing belonging to Mr. Heard, which was exhibited, with a number of other views of the old town, at the Assize Hall, showed that there were considerable vestiges of the castle within fifty years ago. At present all that remains is a postern gate in some premises on the quay. The parish church, St. Mary's, an interesting edifice, with a lofty spire and tower at the west end, has been restored with the exception of the tower, in consequence of which omission there is an ugly mass of masonry inside, that spoils the appearance of the church viewed from the east end. The east window is blocked up internally to afford a position for a large picture of the Descent from the Cross. The works of restoration appear to have been exceedingly well performed. The north doorway, a beautiful specimen of the Geometrical period, and untouched, is peculiar in its arrangement. A flat, pointed, arch is introduced for the doors to shut against, and the space between that and the point of the equilateral main arch above is filled with open geometrical tracery (a circle with quatrefoils, trefoils, &c.), to light the porch. The end of the north transept, too, where, next the ground, there are recesses with monumental effigies, and a door between, is very picturesque. The body of the church is mostly Perpendicular.

At the opening meeting, Mr. Pettigrew read a comprehensive and pleasant paper on the

Antiquities of Somersetshire;

in the course of which he said:—The primeval antiquities of Somersetshire are either few in number or have been scantily reported. Collinson, the historian of the county, writes, under the head of Celtic antiquities, simply the mention of Hantrille's Coit, a large stone, evidently belonging to an ancient cromlech, and estimated to have weighed not less than thirty tons. Mr. Collinson describes it as standing in an inclosure north-east from the church, and forming part of the remains of four assemblages of large ponderous stones, forming two circles, an oblong, and an ellipsis. The first, or large circle, part of which is crossed by an old hedge-row, is westward from the other parts, and is 300 feet in diameter, composed of fourteen large stones, some of which are fallen, and lie flat upon the ground: the second circle eastward is 84 feet in diameter, and consists of eight stones: the oblong, consisting of five stones, stands between the two circles, but rather inclining to the south; and at the southward extremity of all is the ellipsis, which is 40 feet in length, and has seven stones, one of them placed, as it were, centrically, and out of the line of arrangement. The stones which form the second or inner circle are the largest; one of those on the west side being 9 feet high and 22 feet in circumference, and would, upon a calculation, weigh upwards of fifteen tons. Dr. Stukely has regarded the work as the remains of a Druidical temple. The usual opinions connected with this subject have indeed been entertained and supported. The place has derived its name from the erection, as it is called Stanton, from *Stean* a stone, and *ton* a town; and from its ancient roads, Stanton Drew, whence, from its situation, the proverbial rhyme,—

"Stanton Drew,
A mile from Pensford, and another from Chew."

Sir Richard Colt Hoare, Bart., in 1817 transmitted to the Society of Antiquaries an account of a barrow in the parish of Wellow, at Stoney Littleton, denominated by him as the stone barrow, agreeably to its internal mode of construction. It measured 107 feet in length, and 54 feet extreme width, and was 13 feet in height.

In Roman antiquities, Somersetshire is exceedingly rich, every part of the county appearing to be capable of yielding examples illustrative of its occupation by the Romans. Villas have been discovered, and pavements excavated. There are examples at Wellow, Coker, Pitney, Hurcot, and Wadford; but most of these have suffered serious mutilations. Archæological societies were not at the time of their discovery in active operation as at the present period, when, we trust, more decided measures would have been adopted for their preservation.

The churches of Somersetshire may, in general terms, be said to offer to us splendid examples of the fully developed crucial form, with a central tower. The churches specially deserving attention, and of which several particulars have already been recorded in the Proceedings of the Somersetshire Society, are Uphill Old Church; St. John the Baptist, Wellington; St. Mary, Taunton; Lullington Church; St. Cuthbert, Wells; St. Mary, Kingston; Stoke-sub-Hambdon, and Somerton. The Somersetshire churches, in general, are remarkable by the absence of aisles (except in very large buildings, as St. Cuthbert's); by the frequent presence of transepts; by the octagonal form of their towers, and by the abundance of cruciform specimens. The churches which, in the course of our congress at Bridgwater, we shall be able to inspect, are those of Bridgwater; St. Cuthbert's, Wells; Martock; Stoke-sub-Hambdon; Montacute; Brympton; Yeovil; Clevedon; Walton; Weston-in-Gordano, and Tickenham. St. Mary, Bridgwater, is large and handsome: it has nave, chancel, two side aisles, and a tower at the western end, upon which is a lofty spire, so that the tower and spire measure 174 feet in height. St. Cuthbert's, at Wells, is a church of the Third Pointed Period, but some portions of it are earlier. Its tower is generally esteemed to be the finest in Somersetshire. Frescoes were discovered in it in 1851, the most finished of which was a life-size figure of the Saviour, clad in a russet-coloured garment, with a red cloak on his shoulders. In his left hand was an orb, surmounted with a cross: his right was used in benediction: his feet were bare: ℣hc m'cy was ten times repeated on the ground of the fresco, at the foot of which was written *Salvator Mundi*. Martock Church is distinguished by its magnificent nave, which is very long, with six bays. As a whole, it is entitled to the highest commendation, and the effect is strikingly agreeable: the relief one part affords another, and the various effective combinations, proclaim the evidence of design, and entitle the architect to praise.

At the same meeting Mr. Black gave the corporation (as well as the meeting) much gratification by an examination and report on

The Municipal Records.

Taking the parchments in the order in which he found them, he produced an ancient charter of one of the early kings—Edward I.—and others, reciting the inspection of the former charter, and confirming its stipulations. The charter was granted to one William Brewer, of the town of "Burgewater," and it provided that the town should be a free borough, with a free market, and a free fair to last eight days, the burgesses to be free of "lastage and stallage throughout our whole land except the City of London." Next he found a charter of Edward II. confirming this grant; and another further confirming the charter by Henry III. "King of France," &c. dated in the "45th year of our reign, and of our reign of France the 32nd" (1372). In the charter granted by Edward IV. it was stated that complaint had been made to the king that "from ancient time the town has been accustomed both by foreigners and natives of this country, and used for all manner of merchandize; and whereas the town had fallen into great ruin and decay, by want of reparation, so that the merchants had withdrawn themselves and failed to come with their ships to the port;" and this grant was for the purpose of restoring the town to its former degree of prosperity. To accomplish this, the boundaries of the borough were extended in a remarkable manner, the confines of the town being duly set forth in

the charter. He laid before the meeting some other interesting documents, such, he observed, as it seldom fell to the lot of an antiquarian to unfold on such an occasion. These consisted of rolls found among the muniments in the corporation chest, containing the principal accounts of the churchwardens—which were not usually met with among corporate deeds. The town was described as the "town or borough and parish of Bridgwater;" and from these documents it would seem that the corporation had considerable right and power which they exercised over the ecclesiastical affairs of the town. On one of the rolls he had seen that morning the cost of erecting Bridgwater tower—the material and the cost of labour; and what was more important still, had ascertained the time it was built, a circumstance now made a matter of certainty, instead of mere conjecture and speculation. At a meeting in the evening, he pointed out particularly an Exchequer taxation roll, which he said contained the name of every place in each hundred of the county, and the amount of taxation contributed by them. The whole sum for the county was 1,357*l.* 19s. 2½d. of which Bath was assessed at 13*l.* and Bridgwater—showing it to be a place of great importance at that period—at double the amount.

At the same meeting, Mr. G. Parker read a paper on the

Local History of Bridgwater.

The first notice, Mr. Parker said, we have of Bridgwater, is from Doomsday-book. At the time of Edward the Confessor, A.D. 1041, Bridgwater was a private estate of Meile Swain, a Saxon Thayne. He lost it at the conquest, when William the Conqueror gave it to one of his followers, Walter de Dowai, from whom the place derives its name.* His descendants conveyed the lordship of Bridgwater to William Briwere, and King John confirmed to him the manor with the Knights' fees, advowsons of the church, and granted him an ample charter, making it a free borough, with a free market and a fair, and gave him licence to build a castle.

The Briwere family built and endowed the hospital of St. John (the charter of which was dated 1214), for a prior, master, and brethren of the order of St. Augustine, who were to superintend and maintain thirteen poor and infirm persons, besides religious men and pilgrims. William de Briwere made the haven of Bridgwater, and commenced the stone bridge afterwards finished by Sir T. Trivet. The castle and third part of the manor of Bridgwater became vested in the crown about the time of Edward IV. In 1626, Charles I. granted to Sir Wm. Whitmore the manor and castle of Bridgwater. The Whitmores sold it to Henry Harvey, of Bridgwater, who leased it in 1643, two years before the siege of the town by Fairfax, to Edmund Windham. Mr. Parker then gave an interesting account of the siege of the town by the Parliamentary forces, principally taken from Oldmixon's history of England. Oldmixon was a native of the town, and relates that he himself saw Monmouth leave the town for the fatal battle of Sedgmoor. Reviewing the history of the town, Mr. Parker described the old buildings, drawings of which were exhibited in the museum. Within the last century nearly every shop was without glazed windows. Mr. Parker described the sites of the old crosses and gates, and stated that some of them existed during his remembrance. He pointed attention to the house now in his possession, where Admiral Blake was born.

The next day, when the members went to

Glastonbury,

a paper, by Dr. Beattie, on the Abbey there, was read by Mr. George Wright. "Amongst the noblest structures ever raised by man for the worship of his Maker," said Dr. Beattie, "the church of Glastonbury was for ages without a rival. It was invested with a holy tradition that claimed for it the immediate protection of Heaven. Guardian angels, it was affirmed, stood sentinels at its gate, and, like the Seraphim of old, hovered with expanded wings over its altars. It was regarded as the first hallowed spot—the very Zion of the Christian Church in England. The soil on which it stood, the skies through which its spires pointed the way to Heaven, were pronounced richer and lighter than those of any other land—those of Nazareth only excepted. Pilgrims, as they approached the hallowed precincts of Glastonbury—so tradition affirms—were met and welcomed by angels, whose never-ceasing 'hallelujahs' were heard and felt in the heart of every believer,—

'——— Kindling his faith and lifting up
His new-born hopes to heaven.'

The legend, historical as well as popular, which commemorates the founding of Glastonbury, attributes it to no less a personage than Joseph of Arimathea. * * * After the spirit of Christianity had been successfully propagated among the surrounding natives, the modest cell which Joseph had erected with *his own* hands, was replaced by a solid structure, which Ina, King of the West Saxons, presented to the brotherhood. This edifice, on which the king had bestowed all possible care, by selecting workmen qualified for the task, is described as a very fair and stately church, dedicated to Christ, St. Peter, and St. Paul. Thus substantially housed and patronized, the brotherhood of Glaston rapidly increased in numbers and influence. * * * In the reign of King Lucius, two delegates from Pope Clutherius were sent to make a survey of the rising church of 'Ynswyton,' as Glastonbury was then called, and, among other restorations and additions to the original cell, on oratory was erected on Mount Thor. This temple they dedicated to the archangel Michael, that, being so 'honoured by men on earth, he might, by God's command, bring men to honour Him in Heaven.' In the year 430, the church was visited by St. Patrick, who took up his residence there, rebuilt the chapels of St. Michael and the Blessed Virgin, and, after conferring many benefits on the place, spiritual and temporal, was succeeded by St. Benignus, who softened the name of Ynswyton into that of Avalon. In 530 the sacred edifice was again enlarged and embellished by the Bishop of St. Davids, uncle of King Arthur; and when the renowned prince was mortally wounded at Canslan, he was carried hither with great solemnity to receive the last consolations of religion, and a grave in hallowed ground. His remains were long afterwards disinterred by Abbot de Levansey, and reburied in the presbytery.

"In 665, St. Augustine incorporated the brotherhood of Glastonbury into a regular monastic institution, with an Abbot at their head, and governed by stringent laws and regulations. In 708, King Ina, who had declared himself, as already noticed, the great patron of Glastonbury, supported his title by many gifts, also of princely munificence, to the monastery. Among numerous other donations of precious utensils, he gave for the use of the chapel and altar no less than 264 pounds weight of gold, 2,640 of silver; and to these he added an extensive territory, still known as the jurisdiction of Glastonbury, and consisting of seven parishes. His nobles, following the example of their prince, vied with one another in their benefactions and posthumous bequests. Thus patronized, the Abbey became proverbial for its riches. Not a pilgrim entered its holy precincts, but returned home with exaggerated reports of its splendour. These accounts, stimulating the cupidity of barbarous enemies, brought frequent ruin upon the monastery. Danish and other marauders were seen at its gate: fire and sword demolished the buildings, dispersed the monks, and stripped the treasury of all its sacred wealth. But no sooner was the calamity passed, than the brotherhood re-assembled, the church was re-edified, and in a few years Glastonbury not only revived, but exceeded its former splendour."

The Association, after visiting the ruins of Glastonbury Abbey, examined the beautiful architecture of

Wells Cathedral.

The visit was rendered still more agreeable by the courtesy of the Bishop of Bath and Wells. Lord Auckland not only threw open the episcopal palace and grounds to the members of the Association, but kindly accompanied them in their visit to the Cathedral, the Chapter-house, and the Refectory.

In the Chapter-house Mr. Pettigrew read a paper on the Cathedral, embodying a communication on the building from Mr. Britton.

On the subject of the gorgeous display of ecclesiastical sculpture on the west front, Mr. Pettigrew quoted the opinion of Mr. Britton, who considered that the intention of the architect of this venerable pile was to surpass all preceding works of the kind—producing in fact, a sort of "miracle in art," and thus exciting in the mind of the beholder wonderment and devotion. Flaxman, whose pure taste in art will ever entitle him to a high place in the grateful remembrance of all lovers of classic sculpture, characterized the sculptures as presenting the noblest and most useful subjects that could possibly be chosen. Comparing the difficult circumstances under which the work was executed, in comparison with our own times, it was remarked that, in those days, there were neither prints nor printed books to guide the judgment and discretion of the artist; there were no glimmerings of anatomy, of optics, or perspective, which were reserved for the researches of so sublime a genius as Roger Bacon, many years afterwards. Professor Cockerell's deductions on the subjects portrayed in the figures which adorn this part of the building, were considered at some length, and his opinion stated. According to that gentleman, these sculptures were designed to illustrate, in a striking manner, the great and fundamental doctrines of the Christian faith, its happy advent to this country, and its subsequent protection under several dynasties until their execution, A.D. 1214. Mr. Cockerell, who in his investigations had the co-operation and assistance of the late Dean (Dr. Goodenough), ascertained that the stone used was from the Doulting quarries, near Shepton Mallet, and that they were executed by English workmen.

Some of Mr. Cockerell's suppositions were warmly disputed.

In the Bishop's Palace are the remains of the vast "Guesten Hall," the chapel, and other old parts of the edifice, together with the fortified walls, bastion-towers, machicolated gate-house, and other characteristics of a castellated mansion. The deanery contains some curious architectural remains, particularly a fine chimney-piece in the hall, a bay window, and other objects of curiosity. These various buildings, as well as the vicar's close, are illustrated in the Picturesque Antiquities of English Cities, and the latter especially is amply described and displayed by Mr. T. L. Walker.

We shall not pretend to give a complete account of the week's work, but must confine ourselves to a few salient points likely to interest our readers. As a sample, however, of the excursions, we may note something of what was seen on the third day, Wednesday, when a numerous party started early in the morning, and made a descent on

Martock Church.

This is for the most part of the Perpendicular period, and is noticeable for a very handsome open roof, reminding the visitor, by the extent of its decoration, of some in Norfolk: it has also a range of handsome niches on each side of the nave, above the spandrills of the arches separating it from the aisles. Some coarse paintings of figures *adorn* them. A handsome Early English window of five lancets, at the east end of the chancel, is shut off by a huge pseudo-classical composition, in plaster, of columns and entablatures, altogether incongruous, and serving by its ill-proportioned scale to lessen the apparent size of the church. A hope was expressed that it would be removed, and the window opened.

There are three interesting mediæval effigies, the size of life, placed over modern graves outside: these should be placed under cover.

The remains of the Manor-house at Martock include the hall, with a good roof of open timber, and the kitchen at a short distance

* Qy. Burgh-Walter.

from it, connected at one corner with the solar and offices. The windows of the hall, of two lights, with trefoiled heads and a transom, have a cinquefoiled inner arch. A carved stone bracket projects from each side wall, the purpose of which is doubtful. These may even have been built in afterwards. The kitchen retains its ancient fire-place and hatch.

Stoke,

The next place stopped at, is remarkable for the number of good stone cottages of the sixteenth and seventeenth centuries which it exhibits, and very considerable remains of monastic buildings. The church is a Norman structure, with various insertions, and a south chapel of the Early Decorated period, with a range of four lights on each side. A low side window (sometimes called a lychnoscope, and sometimes a vulne window), on each side of the chancel; a squint, or hagioscope, on each side of the chancel arch; and what may be the remains of a stone altar, at the end of the chancel, are amongst the noticeable points. On the south side of the latter there is a large piscina, with shelf above, placed anglewise. The most interesting feature in the edifice, however, is the north door of the church, against which, in more recent times, a porch has been built that obscures the upper part of the ornamented semicircular arch. On the semicircular tympanum, above the straight head of the door, are various rude sculptures, consisting of a tree in the centre, with three large birds amongst the foliage: on the left, or east side of this, is a representation of the archer of the Zodiac, marked at the side, in Byzantine fashion, Sagittarius, and on the other side an animal inscribed Leo, and a representation of the Agnus Dei. The capitals of the columns are leafed, and the shafts are ornamented: the arch displays the zigzag and fret. This doorway would seem to belong to the end of the eleventh or the beginning of the twelfth century. King Stephen, who reigned from 1135 to 1154, bore Sagittarius as a device.

The cill of a window on the south side of the nave projects to throw off the wet, an arrangement not usual in Mediæval work.

Montacute

is a very picturesque village, and offers attractions in the shape of the gatehouse of the old priory, and the residence of the Phelipses, Montacute House. Both the gateway and the residence have been illustrated in our pages, so that we need do nothing more than refer to them.* The hall contains a stone screen, of which we have given an engraving elsewhere; and at the opposite end, on the wall, a large bas-relief, of rather coarse execution, of Stang-riding, or Riding the Skimmington, a mode of punishing certain delinquencies, or of ridiculing a man who allows his wife to beat him, still followed in some parts of the country. It consists in making him ride a wooden horse in procession, with the accompaniment of much noise. One end of the bas-relief shows an interior where the husband, who has visited the beer barrel, having accidentally pulled out the spigot, has been forced to put his finger in its place to prevent the waste of the beer, and being so discovered by the wife, is receiving a castigation: the other half displays the mock procession. The garden at Montacute,

"Walled al with ston,"

with its balustrades, steps, fountain, terraces, and stone summer-houses, is charming in the extreme: a delicious "pleyng place," to step into from my lady's "bowre."

The inscription over one of the entrance-doors,—

And yours, my friend,

would be very satisfactory if it were true.

* See vol. iii. p. 367; vol. vi. p. 43 (view of the stone screen in hall); vol. vii. p. 330, &c.

According to the guide-books, including Murray's excellent new one, Montacute has its name from the sharp-pointed hills near, *Mons acutus:* others, however, would rather find the derivation in the fact, that William Earl of *Mortaigne,* in Normandy, founded here, in the latter part of the eleventh century, a priory of black Cluniac monks. The gateway of the priory, built at a later date, we have already mentioned.

From this pleasant spot, the party proceeded to

Brympton,

where the church, the residence, and a mediæval domestic building, supposed to have been the residence of a chantry priest, form a most interesting group. In the churchyard there are some large stone effigies, of the fourteenth and fifteenth centuries, on which Mr. Planché, who did good service during the week, made some observations. One, a female, has the half-moon head-dress: both should be removed under cover, in order to preserve them. The bell-cot, overhanging the base on all sides, is more peculiar than pleasing. The principal front of the mansion, which presents Italian architraves, window-caps, cornices, &c. with the mullions and transom of the Tudor period, has been ascribed by Walpole and others to Inigo Jones, and probably with truth. In our fourth volume (p. 31), will be found some details of the stable here, said to be also the work of Inigo. A portion of the manor-house belongs to the reign of Henry VII.

From Brympton

Yeovil

is but a short ride, and there, after viewing the church, the tower of which stands grandly, the archæologists had an opportunity of seeing a collection of ancient and modern works of art which had been exhibited for some time past in the Literary Institution there, and is now closed. It contained a number of good pictures, and some very curious works of art of other sorts; for example, a cabinet of medallions, ascribed to the fourteenth century, representing the sculptures on the triumphal arches in Rome, and which ought to go to the forthcoming Manchester Exhibition. There was a small part of a shrine from Glastonbury, which deserves illustration, and we may mention a portion of a metal 2 feet rule, or guage, found in the walls of the tower of Yeovil Church, and sent by Mr. Shout, the architect.

Let us say, as to the church, that the interior, which is of noble proportions and of the Perpendicular period, is sadly disfigured with white and yellow wash. A brass lectern here has a quaint and contracted Latin inscription.

A luncheon at Yeovil, a dinner at Bridgwater in the evening, and then two papers in the Town-hall, one by Mr. Vere Irving, on "Earth-works," and the other by Mr. French, of Bolton, on "Rayed Banners and the earliest Armorial Charges," ingenious if not correct, completed the business of a long day. And here, with a hint to the very liberal and enlightened corporation of Bridgwater, that the aspect of their Assize Court, looking up at the ill-arranged heap of timber which forms its roof, is scarcely worthy of them, we must close our present notice.

ON THE DRYING AND BURNING OF BRICKS.*

FOR burning bricks, we have to employ the utmost care and attention in exposing them to as high a heat as they can stand without endangering their melting. If they are not sufficiently burnt, they will be very absorbent, and will retain sufficient moisture for a frost to destroy them.

The burning is carried out on two principles. First, in the neighbourhood of London and Manchester, by what are termed close fire clamps; that is, with as little draft as possible, or by a smouldering fire which occupies a month or six weeks in burning, having the fuel spread in layers between the bricks. The other system is by a draft of hot air or flame from furnaces or fire-holes in square or circular buildings, called kilns.

* See p. 467, *ante.*

Of these there is an endless number of constructions; some nearly approach the close fire clamps, having a very low draft, and take a week or nine days to burn them. Others have an increased draft, and take four or five days; and the more recent constructions effect the desired object in from forty-eight to seventy-two hours.

The close fire clamp is the favourite system around London and Manchester for burning bricks, which arises from these large populous cities supplying the brickmaker with a very cheap fuel in the shape of the refuse ashes from the houses and the manufactories, and also from the clays in these districts taking little fire to burn them. The London makers not only burn by layers of the ashes between the bricks in the clamp, but, as I before mentioned, add in the making about 30 per cent. to the clay before it is moulded. Around Manchester, ashes are not used in making the bricks, but only in burning them. I think it quite superfluous to describe the setting or constructing these clamps: it would occupy much time, and the fewer we have of them, the better bricks will be supplied. But the principle is to stack the bricks close together, and to check the draft as much as possible, the fuel being intermixed with the ware. The wind is often very troublesome with clamps, and drives the fires to one side, by which that is over-burnt and the other side almost useless from not being burnt enough. I have not had any experience in these clamps myself, but I am informed by those practically acquainted with them, that the inferior (that is, the over and under burnt) bricks are often in a proportion of from 30 to 50 per cent.; and these have to be sold at a reduced price. This irregular firing produces the numerous qualities of bricks which I described in my previous paper. All are made equally well, but are destroyed by the unequal heats to which they are exposed. The heat at which the bricks are burnt varies in the London close fire clamps from 5 to 20 degrees. That the close fire clamp is the worst system of burning bricks few can doubt; and it would not be so tenaciously adhered to around London and Manchester, but from the supply of ashes being so great and so cheap. As a proof that the system is not good, the brickmakers in the collieries all use kilns, even where they have in their works refuse coal free of cost. But they cannot sell their bricks unless they are of good quality: they therefore use the kiln with a quick draft.

On visiting the brickworks at Epsom a few weeks since, to inspect the kiln which I have described to you, I was quite convinced that my opinion was right with respect to close fire clamps. The bulk of the bricks made in these works are burnt in the clamps, and a portion in the kiln. The most casual observer could not but be struck with the difference of the ware. Before I leave the subject of close fire clamps, I might mention that the London ashes could still be used by their being ground up fine amongst the clay; and then a very small quantity of fuel in the furnace of an improved kiln would burn the bricks of one uniform quality, and enable the waste heat to be economised for drying the green ware. The ashes, as they are now used, have their particles too large; and these, on being consumed, leave the bricks full of cells, and less compact and solid than other bricks.

The burning kilns are generally rectangular brick constructions, either open at the top or arched over, but some are circular buildings, or cupolas, called "ovens." It would take a whole evening to describe every one, and the different systems adopted in each: I will, therefore, only briefly explain the burning of an improved square kiln, and of a round one. The construction of the kilns cannot be correctly explained without drawings. The square kilns for large works, as erected by Mr. Beart, are built in pairs, to save one wall: they have the furnaces along one side, and the centre wall supports

two arches of the kilns. When they are thus built together, one is burning while the other is being discharged and filled, the cool kiln acting as a buttress to the burning one. The late Dr. Cother, of Gloucester, built a pair of these kilns under one arch. The bottom of the kiln is constructed with furnaces every 5 feet from centre to centre, and built with fire bricks. Above the fires, and about 5 feet from the bars of the furnace, is the floor of the kiln, supported on walls running through the length of the kiln, about 4 inches apart, and in these walls are arches at each furnace. The walls are tied together by the lattice-work of the floor of the kiln, and the ends of the bricks, forming the open floor, are kept about 3 inches from each other. Through these small holes the flame from the furnace enters the goods to be burnt. The height from the open floor to the top of the arch is about 15 feet, and the vertical walls are from 12 to 14 feet apart. Thus a large space is allowed, as they can be built of any desired length. These kilns are constructed to hold from 50,000 to 200,000 bricks each, and are capable of being burnt from eighteen to twenty times in a year. The arches of the kilns have a row of small chimneys, about 3 feet high and 5 feet apart, built down the centre, and a similar number on each side, through which the waste heat and gases escape.

The first process is to fill the kiln, which is called "setting." The bottom rows of bricks are kept wide apart over the floor, to allow the flame to enter more freely. On these are placed one or two rows of bricks, crossing the course on the floor, and about $\frac{3}{4}$ of an inch apart. Every one or two courses are then crossed, so that the fire has to pass through a series of network, formed in the setting of $\frac{3}{4}$-inch squares. When the kiln is filled, the entrance, called the "wicket," is built up close with burnt bricks, and plastered over with loamy clay. The fires are then lighted in the several furnaces, and for twenty-four hours are allowed to burn very gently, but gradually increased, air being admitted, that the draft or warm current may drive off the steam as fast as it is formed, for bricks cannot be *thoroughly* dried previously to their being stacked in the kilns. When the steam ceases to flow from the top chimneys, the fire is gradually increased, and the heated gases flow with greater velocity through the ware. At this time the judgment of the burner is called into requisition, for if his furnace should become too hot, he may vitrify the bottom bricks, while those at the top of the kiln, 20 feet from the fire, would be quite unburnt. This he prevents by opening his furnace lids, and allowing a current of air to enter sufficient to cool his furnace. He then again closes the lid, in order to attain what heat he can safely use. These operations of heating and cooling are continued until, on looking at the top chimneys of his kiln, he sees that he has attained a sufficient heat. After this he gives the kiln a few hours more fire, but gradually admitting more air, which begins to lower the temperature of the bottom part, and, from the increased draft, carries the heat to the arch, and thoroughly burns the top bricks. I have often seen these top bricks, 20 feet from the fires, harder burnt than those on the floor of the kiln, within 5 feet of the fire. After the burning is completed, the fire doors are shut to prevent the kiln cooling too rapidly, and for two or three days it is pouring off to *waste* an immense amount of heat, free from all impurities. When the kiln is cool, the wicket is taken down, and the ware drawn out for use. With a good burner the bricks will all be of equal quality, and, if well made, will all command the highest price, not a moiety only, as in clamp-burnt bricks.

The common brick-kiln is a rectangular building, generally open, but sometimes arched over. In the side walls and opposite to each other are built fireplaces, or holes for the insertion of the fuel. The furnaces are formed in the setting of the kiln with unburnt bricks, and above these the kiln is filled as above described. In these kilns, from the raw ware forming the furnace, the flash of the flame from the fires in the walls too often vitrifies and destroys the nearest bricks. In the open kiln, as the fire or heat reaches to the top, the fireman soils or earths it down, which throws the draft to another part more backward; and, as it continues to rise, he proceeds with this operation until all the top is earthed in: he then continues the firing until the whole has sunk, by the contraction of the clay in the fire, to the desired depth. The fire-holes are then stopped up with mud, and the kiln is left to cool gradually. If the air were admitted too rapidly while the kiln was at this intense heat, it would cause bricks made with strong clays to fly to pieces like glass: it is, in fact, the process of annealing. Cooling too quickly also affects, in many clays, the colour of the bricks.

Temporary kilns are constructed in the country with unburnt bricks, and called clamps. In Staffordshire, the bricks are burnt in small round kilns, called ovens, which hold from 7,000 to 8,000 bricks each: these are burnt from fire in the walls round the ovens, and the raw ware is set in, so as to form a flue from each fire, to direct the flame to the centre. These ovens burn very quickly, and a most intense heat can be obtained in them.

I will now more fully describe a principle of burning which I have had in practice for the last six years, and which I can therefore recommend with great confidence. The great object in brick burning is to attain a sufficient heat to thoroughly burn the ware with as small a consumption of coal as possible; and with nearly an equal distribution of the heat over all parts, so that the whole of the ware, being subjected to the same temperature, may contract equally in bulk, and be of one uniform colour throughout. The advantage is also gained of burning in much less time than in the old kilns, which, on an average, took a week; and the management is so simplified that any man, even though not at all conversant with the manufacture, after he has seen one kiln burnt, will be able to manage; and the last, though not least, advantage is, that of delivering up to us the waste heat at the ground level, or under the floor of the kiln, to be used in drying the green ware, or in partially burning the next kiln.

Hitherto the heat has been applied by a series of fire-places, or flues and openings round the kiln, each exposed to the influence of the atmosphere; and in boisterous weather it is very difficult to keep the heat at all regular, the consequence of which is, the unequal burning we often see. The improvements sought by experimentalists have been the burning the goods equally, and, at the same time, more economically. These are obtained by the patent kilns, as improved by Mr. Robert Scrivener, of Skelton, in the Staffordshire Potteries. The plan is both simple and effective, and is as follows:—A furnace is constructed in the centre of the kiln, much below the floor level, and so built that the heat can be directed to any part of the kiln at the pleasure of the fireman. First, the heat is directed up a tube in the centre to the top of the oven or kiln, and, as there is no escape allowed to take place there, it is drawn down through the goods by the aid of flues in connection with a chimney. Thus, all the caloric generated in the furnace is made use of, and, being central, is equally diffused throughout the mass; but, towards the bottom, or over the exit-flues, the ware would not be sufficiently burnt without reversing the order of firing. In order to meet this requirement there is a series of flues under the bottom, upon which the goods are placed, with small regulators at the end of each: these regulators, when drawn back, allow the fire to pass under the bottom, and to rise up among the goods which are not sufficiently fired, and thus the burning is completed. By means of these regulators the heat may be obtained exactly the same throughout: there is, therefore, a greater degree of certainty in firing, and a considerable saving of fuel, with the entire consumption of the smoke. From the fire or draft being under command, so as to be allowed either to ascend or descend through the ware during the time of burning or cooling, the waste caloric can be economised and directed through the adjoining kiln in order to partially burn it, or be used in drying off the raw wares on flues or in chambers. I have found the saving of fuel in these kilns over the common kiln, 50 per cent.; and to give an idea of the facility with which they can be worked, it is common for my men to fill the kiln, burn, cool, and discharge it in six days. But the time I usually allow is, to have each kiln set, burnt, and drawn in seven days.

To sum up the manufacture of bricks on the most improved system, the whole works should be under one roof, and only occupy a fraction of the space devoted to this manufacture in the field. The brick manufactory may be a square construction, a fourth of which, across the top, would be occupied by the steam-power mills and machines, with an allowance for working room: one-half would be used for drying the ware, and the remaining quarter for kiln-room. The clay should be brought into the works from the pit by trucks, on a light railway, of which some excellent ones for the purpose are manufactured by Mr. Crosskill, of Beverley, the celebrated agricultural implement maker. It should then be manufactured into bricks by machinery, and delivered to a drying-chamber, or laid on open flues (the latter being the cheapest in construction), in order to be dried, the flues or chambers being heated by the waste heat of the burning kilns. As soon as the bricks are dry, they should be stacked in the kiln, burnt, and delivered out, at the opposite end of the manufactory to that at which the raw clay entered, ready for use. This can be done in from eight to nine days from the time when the clay first entered the works; being a very little more time than is occupied in burning alone in many districts.*

To attempt to give the cost of manufacturing would only mislead. The largest item is labour, the cost of which varies so much between manufacturing and agricultural districts. The next is coal or fuel for burning, which ranges from 3s. to 20s. per ton, according to the district of country. Again, one clay requires a large expenditure of fuel to be used, in order to attain the most intense heat; while another will burn sufficiently hard at about 10 degrees Wedgwood. The consumption of coal for burning bricks varies with the clays, from 3 to 20 cwt. per 1,000.

BRIDGE FOUNDATIONS.

ROCHESTER.

IN connection with the particulars already given of the mode adopted in constructing the foundations and piers of the new Westminster-bridge, some account of other systems of founding may be interesting. Let us first allude to the principle adopted from screw mooring, in Mitchell's screw piles, which have been used with success for a pier at Courtown, county Wexford; also for the staging for the breakwater at Portland; for the foundations of many railway bridges and viaducts; and for the Fleetwood, Maplin, and other lighthouses raised aloft on slender supports from the sand.

Pneumatic cylinder piles have been applied according to two different methods. The first invention was due to Dr. Potts, and was adopted in a bridge on the Chester and Holyhead Railway. The cylinders were exhausted by a double air-pump, the pile sinking as the exhaustion was continued. A cast-iron plate was fixed on the heads of the piles, on which the pier was built. The cylinders, as first used, were 12 inches in diameter; but subsequently a diameter of 5 feet, or even 7, feet was found advisable. This increase required increase of power to overcome the friction of the sides,—and that was effected by interposing another vessel, between the tube and the air-pump, which was first exhausted; when a communication being opened between the tube and the exhausted vessel, a double effect was produced,—namely, the excavating or exhausting process as in the former instance, with the addition of a sudden blow on the head of the piles.† The failure, however, in this process at Rochester, led to the adoption of the modification of the diving-bell principle, by Mr. John Hughes, which we referred to in our notice of the Rochester bridges,‡ where we alluded to an analogous in-

* The quality of bricks depends on the fineness of division of the particles, the proper admixture of the earths and their thorough amalgamation, the closeness or compactness into which they are worked, and, finally, the having been exposed to a sufficient heat to render them indestructible from exposure to any change of atmosphere.

† Minutes of the Institution of Civil Engineers, April 22, 1851, "On Foundations, Natural and Artificial," by Mr. S. Clegg, jun. M. I. C. E.

‡ See *ante*, p. 418.

vention by Mr. Bush, for which he obtained letters-patent in 1841, and to one by Lord Dundonald, patented in 1830. An application of a similar principle appears to have been made in France, in the sinking of a pipe as a mine shaft: it is described in the "Comptes Rendus" of the Academy of Sciences, and in Dr. Ure's Dictionary of Arts, Manufactures, and Mines. The conditions to be answered by Mr. Hughes, were, that the cylinder pile should be kept free from water, until sunk 30 feet at least through the bottom of the river, in order that the men inside might excavate with ease; that the stone and earth should be promptly removeable; and that the pile should descend truly placed. When sunk, the cylinders were to be filled up with concrete and brickwork.

The cylinder lengths were in 9 feet, 7 feet in diameter, cast with flanges, at which they were screwed together and made air-tight. The top length had a wrought-iron cover bolted to it, through which two cast-iron chambers ⊔ shaped in plan side by side, in reversed positions, called "air locks," were fixed in the cover, partly above and partly below it. These formed the means of passing in and out of the cylinder, and were provided with valves or doors, and air-cocks to regulate the escape or the action of the compressed air of the pile. One valve or flap, at the top of the "air lock," leading to the external atmosphere, was closed when the other communication with the cylinder was open and the "lock" filled with compressed air; and the valve or door, lower down, opening into the cylinder, when the upper valve was closed, allowed the workmen to pass the materials out of the cylinder, or *vice versâ*. Each "air-lock" had two sets of cocks, one for forming a communication between the cylinders and the chamber, the other between the chamber and the atmosphere. One set of cocks was designed for the use of men passing in and out of the cylinder, and accessible from the inside: the other set was used in passing buckets or materials through the "air-locks." One cock between the chamber and the atmosphere was placed in charge of a man inside the cylinder, who, having closed the door, could let off the air and pass a bucket from inside to outside. Another cock, from the interior of the cylinder to the chamber, was worked by a man outside, who, on closing the flap, could fill the chamber with air, and pass a bucket from outside to inside. The principle is similar to that of canal locks.

The compressed air was supplied to the cylinder piles from a double-barrelled pump, worked by a steam-engine. The pile was weighted down to cause its descent, and was pitched with studied accuracy horizontally and vertically. The length of cylinder fitted with the air-locks had to be removed when a fresh length was added,—the water of course filling the pile each time,—from which, however, it could be again ejected by a few strokes of the pump.

At first, when the system was set in operation, the water was forced out at the foot of the pile; but this plan being found objectionable, a syphon pipe was added, descending inside to the bottom of the cylinder. Other minor contrivances were applied, which we need not describe. Some of the cylinders, as we stated, were carried down 40 feet.

Since the foregoing account was written, we have observed that Mr. Edward Cresy, in his recently published Supplement to his "Encyclopædia of Architecture," has given an account of the foundations of Rochester-bridge, with illustrations. This Supplement, we may say, appears to be a valuable work of reference as to many improvements dating subsequent to the publication of the first edition of the Encyclopædia. To it, however, we must give attention at a future opportunity.

In 1853, Mr. Hughes patented a modification of the method used at Rochester, which appears to deserve some attention at this juncture. The invention, which is for "improvements in building or forming structures under water or below the surface of the ground," contemplated the use of a hollow vessel, or "shoe," upon which the cylinder was to be raised, the structure being built around and externally to it,—the "shoe" descending and forming part of the foundation. Where required, the "shoe" can be floated on the water by aid of a deck, or floor, and the cylinder raised as before. Exhaustion, or compression of air to the cylinder, are applied as necessary; and many modifications and combinations of the invention will readily occur.

In the course of the inquiry, which we have endeavoured to open, into recent inventions for founding and building piers, we think it will have appeared that there is no reason to assume that coffer-dams—involving great expense, loss of time, serious obstruction to the water-way, and injury to river-banks—are inevitably required in the Thames bridges. We have noticed several old and new inventions, each possessing some merits, and each certainly not free from defects. Would it not be possible to make fresh combinations from such appliances, and to remedy the defects of one invention, by enlisting, further than has been done, the special advantages of another? If, for the timber-bearing piles of the new Westminster-bridge system, cylinder piles deeply founded and cased in concrete were substituted, the pier could hardly be inferior to the supposed strength of London-bridge, and might be free from some objections which we apprehend there are at Rochester.

THE LATE MR. THOMAS HOPPER, ARCHITECT.

MR. HOPPER was, we believe, in the seventy-ninth year of his age. Few men have passed a more active or energetic life than his, or have been more extensively engaged in important architectural works; and this will be considered more remarkable by some when it is mentioned that Mr. Hopper did not receive what is commonly called an architectural education. His father was a measuring surveyor, clever and prominent in his business, but of intemperate habits: his son's first years of active life were spent in assisting, or rather carrying on, his father's business; and these responsibilities dated from the early age of eighteen.

It chanced that, while engaged in this pursuit, he went to Craven Cottage, Wandsworth, then in course of erection by Walsh Porter, the "*arbiter elegantiarum*" of that day, and the guide of the Prince Regent in all matters of art and taste. Mr. Porter was struck with the ability of the young man, perceived his talents, and became his patron.

Hopper's first work was the enlargement and decoration of Craven Cottage, a good specimen of the *cottage ornée* style, which has since become fashionable; and from this period his career as an architect may be dated. He was introduced to the Prince Regent, and erected for him the conservatory and other works at Carlton House. His next noticeable work was Slane Castle, in Ireland, for the Marquis of Conyngham; and from that time his engagements in the erection or alteration of private mansions in all parts of the country became very numerous and incessant.

We have not a list of these commissions, but among them may be more especially named Penrhyn Castle, at Bangor, in North Wales, a work whereon vast sums were expended, and upon which his claims to the possession of high qualifications for his art would best rest; Margam, in South Wales, a noble mansion in the enriched Tudor style; Dunkeld, in Scotland, for the late Duke of Atholl, prematurely stopped, but laid out on a very comprehensive plan, and intended to be completed in a style of princely magnificence; Leigh Court, near Bristol, a classic house for the late Mr. Miles; Llanover Court, in Monmouthshire, for Sir Benjamin Hall; and Gosford Castle, in Armagh.

For alterations on an extensive scale we may mention Stansted Park, near Havant, Hants; Alton Towers; Stoneham Park, near Southampton; Rood Ashton, near Trowbridge; Easton, near Dunmow; Kimmel Park, near St. Asaph, for Lord Dinorbin; Amesbury Park, near Salisbury; and many others of less pretension. He erected several gaols on the system formerly adopted both in Essex and elsewhere, and more recently the extensive works required for the conversion of the Essex County Gaol at Springfield to the cellular system, involving an outlay of above 40,000*l*. He was also the architect of Arthur's Club House, in St. James's-street; the Atlas Fire Office, in Cheapside; and the Legal and General Life Office, in Fleet-street. For about forty years he held the office of County Surveyor of Essex, and that of Surveyor to the Atlas Fire Office.

He has died in a good old age; and though he cannot be pointed to as an example of what is now required in an architect, yet we may profitably emulate his great activity and constant perseverance. In his best days his flow of spirits was exuberant; his powers of conversation remarkable; his memory most tenacious. He never drank anything stronger than water, and could bear a marvellous amount of fatigue. Towards the close of his professional career, he designed St. Mary's Hospital, Paddington, and unwisely consented to superintend its erection gratuitously: such services are never very highly valued, and the engagement throughout occasioned Mr. H. considerable vexation. Of his most recent pupils, Mr. F. J. Francis (to whom we are indebted for information), and Mr. Burn, who has latterly had charge of Mr. Hopper's business, have made themselves best known.

He was a competitor for the General Post Office at St. Martin's-le-Grand, and he subsequently published his design, which he always maintained had been adopted in the existing structure. There were on that occasion nearly 100 designs submitted by 89 persons, but on examination it was found that not one was adapted for the business of the office; and Sir R. Smirke, who had not been a competitor, was ultimately commissioned to erect the building.

Mr. Hopper also, at great expense, published in folio his plans for New Houses of Parliament.

On the whole, we cannot but feel that, by his death, a man of mark and power has been taken from amongst us.

HOUSE ADORNMENT.

To Girtin and Turner we are mainly indebted for the improvement in water-colour painting which has become now such an important agent in the decoration of English dwellings. The drawings by Girtin, most of those by Clennell, and the early water-colour pictures by Turner, are remarkable for a broad simplicity of grey colour, and have the appearance of having been washed in, to a considerable extent, with Indian ink, and the lights tinted on with warm colours upon the lights and shadows already modelled with the Indian ink. These early drawings form a striking contrast with the glow, strength, and purity of colour to be found in the later works of Turner, and the water-colour painters of the present day.

With proper management of the hanging and papering, nothing can be more elegant in a modern house than a well-selected collection of water-colour drawings. It does not answer, however, to mix them with prints, or with oil pictures, for one style of art, to a very great extent, destroys the effect of the other.

There is at present not so much of the decorative work of our dwellings left as in the olden time for the ladies to exert their ingenuity upon, but even that little might be somewhat better done. The patterns of the wrought covers of chairs and footstools are often of anything but good design. Instead of adopting some of the forms now so much in use, how much better it would be to adapt some of the scroll-work on our Gothic tombs and structures to this purpose. What, for instance, can be more elegant than some of the ivy, hawthorn, and other leaves on the tombs of the kings and queens in Westminster Abbey. These forms, and many of the Gothic diapers, would, if properly used, and wrought in appropriate, rich colours, make a very great improvement in the needle-work decoration of the furniture of the present time.

The large old-fashioned screens which in former days were not only very ornamental, but also very useful and comfortable, often possessed much artistic merit. Some were of carved ivory, inlaid with light blue silk, silver, scarlet, black, &c.; some of embossed leather, others of tapestry work. The smaller kind of fire-screens might be made to afford an opportunity for artistic display.

In the great Exhibition of 1851, the collection of English and other carpets suggested several ideas for the improvement of this important manufacture at home. Those who carefully examined this portion of the Exhibition, while they were gratified at the skill shown by the English, were at the same time astonished at the richness and harmony produced in the carpets of Turkey and Persia. In the furnishing of a house, the choosing of the carpets is of more consequence than is generally supposed. In a room in which gorgeous pictures, by Titian, Rubens, and such artists are hung, and the fittings are of corresponding taste, the carpet will admit of a good deal of colour; but the carpet ought always to be a secondary consideration, and in no instance intrude upon the eye. It is, perhaps, a good sign of the proper balance of the interior decoration of a house, if in passing through it you are not led to observe what the carpets are.

GEOMETRICAL PRINCIPLES OF CONIC SECTIONS.

HYPERBOLA.*

THE hyperbola has lately acquired an importance in the eyes of students of Greek architecture by the publication of Mr. Penrose's work on the "Principles of Athenian Architecture," wherein he demonstrates that this is the curve which the Greeks adopted for the outline of their columns, and also of several of their mouldings. We therefore proceed to show how the knowledge of its properties will enable the architect to employ the hyperbola to form the entasis of his columns, instead of giving them the barrel-shape which we see in such columns as the Duke of York's monument.

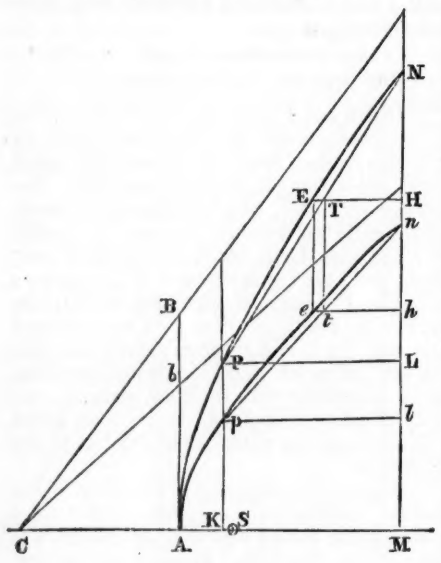


FIG. 1.

Let A P N, A p n (fig. 1), be two hyperbolas having a common centre C, and a common vertex A, but having asymptotes, C B, C b, inclined at different angles to the axis C A. Draw the vertical line A b B; then, if we draw any ordinate M n N, it is a property of the curves that M n : M N = A b : A B; so also K p : K P = A b : A B; therefore the horizontal lines P L, p l, are equal.

Mr. Penrose has made use of this property to show how a templet may be made at full size for the entasis of a column of the Parthenon, which method we now proceed to explain.

Let the semi-axis C A represent one foot, and take C S : C A in the ratio of, say 4 : 3, and make C b = C S, S being the focus of the given smaller hyperbola, by means of which the larger hyperbola is to be drawn. Take C B as the asymptote of the larger hyperbola, a part of which is to form the required entasis. We suppose that the column is to start from the pavement at P, and that P L represents the semi-diminution of the column; P and N will be found from p and n by means of the beforementioned property. Draw the chords p n, P N. Then, if we form a templet of the proper length of the column, and draw on it the line P N, and divide P N and p n into an equal number of parts, we can readily obtain as many points of the required curve as we please. For, let T on P N correspond to t on p n; draw the horizontals H T E, h t e; then by the above property E T must equal e t; and e being a point on smaller curve, E will be a point on larger curve; and so for any number of points.

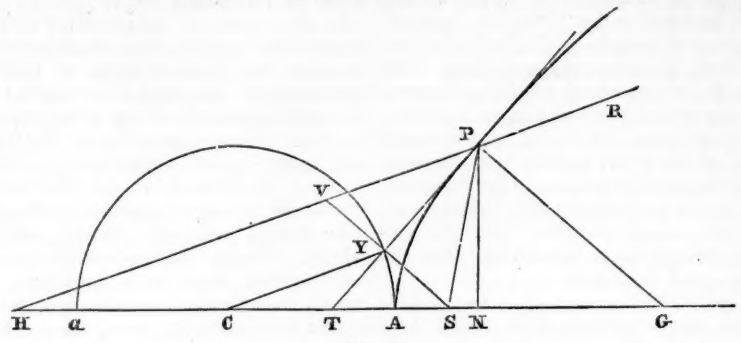


FIG. 2.

To draw a tangent at any point P (fig. 2) of an hyperbola, we proceed thus:—From the foci H and S draw H P and S P, on H P take P V = P S, join S V and bisect S V in Y, then P Y is tangent at P. If we draw a circle on the axis A a, for its diameter, and C its centre, the point Y will be found to be on this circle. For, join C Y, since S Y = V Y, and H C = S C, therefore C Y equals half H V (Euclid, book 6), equals half the axis A a, or C Y = C A (Since H V = A a, see last art.). Also, since V P = P S, and V Y = S Y; therefore, S Y is perpendicular to the tangent P Y. Therefore we have this property, *the perpendicular from the focus upon the tangent meets it in the circle drawn upon the major axis.*

It also follows that the tangent bisects the external angle H P S; therefore if we produce H P to R, and draw the normal P G or perpendicular on the tangent at P, then P G bisects the internal angle S P R, or, angle S P G = angle R P G. Hence it follows from the property of light that if a ray from S falls on a hyperbolic reflector, it will be reflected as if it had come from the further focus H. Compare this with a similar property in the Ellipse (page 141, *ante*).

To find where the tangent from any point T (fig. 2) on the axis meets the curve, *find C N a third proportional to C T and C A*, as in the case of the Ellipse (page 106, *ante*), draw the vertical N P to meet the curve at P, then T P is the required tangent. E. W. TARN, M.A.

DESIGN AND SYMBOLISM.

THE view lately taken respecting non-progression in taste, cannot be considered satisfactory. It is supposed that we are at present in a torpid state, principally encumbered with symbolical decoration, which cannot be shaken off without difficulty. There are hints concerning this period, as if the present were the shade and the future were to be the sunny side of the beautiful, and that an equatorial line were to divide it into two hemispheres; but before the conclusion of every such essay, the reader becomes convinced that the rise and fall of styles are nothing more than transitional architecture.

In point of design, for many years great exertions have been made to get up a new style,—one that may be considered perfectly original, and still rank amongst the classic elegancies. Lately, nothing is heard thereof; and the consequence of its failure is, that draughtsmen are still confined to their books of proportions, and must reduce existing forms, with certain modifications, to the subjects on which they are engaged. They must consult libraries, and find, amongst the engravings of masterpieces, matter which, when collected and arranged, may be suitable for modern purposes. Thus, the spirit having departed from the stones of temples and amphitheatres, the designs may be ingeniously applied to palatial warehouses and other civil edifices, without causing any degree of suspicion; and it follows that books written on design and architecture, when they embrace what has been built, existing wholly or in ruins, remain works of reference, and are likely to continue so, until the expected change has arrived at some practical degree of operation.

The present state of art is nothing more than a reflex of the past, no matter how styles have changed, or when they were introduced. The rarest modern novelty will be found, on research, to have its origin in some great idea written, sculptured, or built, some centuries ago. Its revivification in another shape, or for another purpose, does not render the design less pleasing, no more than using the same materials in erecting different buildings. When art requires aid to carry out something unprecedented, she naturally looks back to what was or would have been done, under similar circumstances, by the early architects. In their works she points out to the designer the various phases of building, from mere reality to embellishment in pseudo-material, and from ordinary decoration to symbolism; and it depends on his own resources to adopt what will fully realize the purport of his imagination.

When we speak of a creative talent in conjunction with architecture, something more is meant than bricks, stone, iron, and glass; something superior to mere reality. This is to the architect what genius is to the poet: intuitively there is no distinction. The one uses ponderous materials, the other mental; and both kinds are taken up in a rough state from the world. They see mankind using this matter and this thought, in the ordinary way of living, whereas they give them a different meaning, shape, and order, so rendering them beautiful. The architect, in particular, may depart from beaten paths to cause admiration; still his works must be subservient to the usages of society. As improvement progressed, art required decoration, and genius gave her that adornment from one of the sublime works of creation,—foliage; but if nothing more than natural necessity animated mankind, we should still behold shapeless masses, or plain geometric piles, without reference to purport.

Decoration may be called by some an obstacle in the progress of legitimate architecture. Perhaps it has been when introduced with profusion; but it necessarily becomes the business of an artist to relieve his work with embellishment, tributary to the genius of his edifice; and if this be done with taste, he fulfils what talent requires on his part. At the present day an artist cannot enter into the general improvement without being figurative; and, in order to be original, he must combine natural and artificial existence.

Reality, indeed, must be the basis of design; but that reality would be dead walls or loopholes, unaided by symbolism. What now would be the state of the original Pointed style, were it not improved, extended, and exalted by those who saw nature with science? The different excrescences which shoot out from church and monastery, the construction of a mediæval building, the spire pointing upwards, are all simply architectural now, but not the less symbolical of certain great truths; that is to say, there was some centre for this style of architecture. Such sublime unity of expression could not have been produced, unless the architects inwardly felt what they outwardly showed in their works.

To the eye of an artist, there is not a more beautiful object than a figurative female bust; but the simplest subjects may be made the sport of poetical fancy. It is difficult to con-

* See p. 345, *ante*.

vince men in general that such can be done, or that poetry may enter into the most rough and arduous occupation. In architecture, poetical licence becomes symbolism; and by it, can an artist, at any time, beautify a type or render it monstrous, in accordance with the bearing of his design. He cannot be at a loss for varieties or truthful position, when his conception of the ideal is in harmony with the purport of the building; and even then he may symbolize himself, or do as Hackett, the assistant architect of Batalha, who is seated on a lofty projection, looking down on the lofty works he superintended.

When the outward forms of buildings became typical, it is not surprising that everything internal followed in due course. The desks, tables, altars, fonts, and all other ecclesiastical and civil appendages were moulded and fashioned similarly. The Pointed style of church architecture could not long have remained in its rude state, when so many illustrious personages contributed to render it perfect. Almost all individuals, in those times, appeared zealous to make church edifices eminent; some, perhaps, induced by private motives, but the many with exquisite feelings of spirituality. It is but a natural conclusion, that symbolism should be the result of this sincere devotion—the service of religion unalloyed with worldliness, as much as it could be practicable. And we are well aware, that where matter-of-fact sculpture and figures would offend the eye, and turn divine worship into ridicule, the same may be raised for contemplation before the mind, beautifully in figurative outlines.

Temple and church building was the sphere in which architecture first arose, long, naked, and detached stones, and ultimately arrived at perfection; and from it proceeded all other varieties of construction. In the transition, no doubt, it was accompanied with those symbolical ornaments, long before fixed as classical, and considered inseparable from the composition. The mediæval structures communicated their influence to military and civil affairs, and castles, mansions, and farmhouses were built and decorated in accordance with the spirit of the age. If, independent of their originality, time rendered these buildings venerable, and even coerced the mind to admiration, that is no reason why they should be copied servilely, at the present day, when the same field is open to the studious and persevering, and decoration may be greatly diversified, in harmony with the purpose for which an edifice is intended. But, to carry this argument to an extreme, let those who desire to cast off the figurative, imagine such a building as Salisbury Cathedral stripped of all its ornamentation, tracery, spire, and everything but what is absolutely necessary, after the plainest manner, for public worship: let them imagine this, and even the cruciform plan changed to quadrangular; and their feelings will soon convince them that there is something more than decoration and show in the mediæval church. They may not deny that religion, in those days, suitably arranged herself in external forms. They may probably acknowledge that design and imagery are identical, and that symbolism is the soul of architecture.

FRANCIS SULLIVAN.

THE CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.

THE annual meeting of this association took place on 18th ult. at Welchpool. The days of meeting were Monday, Tuesday, Wednesday, Thursday, and Friday, in the week beginning with the 17th ult.

On Monday the business of the association commenced by the members holding their preliminary meeting in the evening. The public meeting was held at half-past eight. The attendance included the Earl of Powis, Archdeacons Clive and Williams, and various other clergymen and other gentlemen, with several ladies. Lord Powis presided. Lord Dynvor, the late president, was absent owing to illness in his family. After an address was delivered by Lord Powis to the meeting, the annual report was read, and unanimously approved of. The Rev. H. L. Jones then gave a sketch of the notabilia of Montgomeryshire, including Offa's Dyke, for the preservation of a portion of which archæologists were indebted to their president, Lord Powis.

On Tuesday the members of the association had arranged to make an excursion to Breidden, Buttington Church, Crew-green, and Llandrinio Church, returning through Guilsfield. The weather, however, was unfavourable, and the members therefore disposed of themselves as best they could until the evening meeting, when the attendance was much more numerous than on the preceding evening. The Rev. E. L. Barnwell then read an able and interesting paper on "The Ancient Stones of Brittany," especially those of Loc-Maria-Ker, near Carnac, which had been somewhat overshadowed by their more celebrated companions at Carnac. After some discussion on the subject of this paper, Archdeacon Williams read a learned paper on "Ancient Celtic Coins." The Museum proved to be a chief point of attraction to the archæologists on Tuesday. The objects were arranged in the Grand Jury Room, at the Town-hall, and embraced not only a great number of local interest, but others, the associations of which were not confined to the Principality.

On Wednesday, the members of the Association visited the antiquities of the town of Welchpool, including the church, with its chancel of fourteenth century, &c. They were afterwards received at Powis Castle by the president. Here they inspected the bibliographical treasures of the earl's library, the numerous historical portraits of the gallery, the architectural details of the castle, the terraces and hanging gardens, &c. A cold collation was served in the long ball-room. At the evening meeting, which was fully attended, Mr. J. H. Parker, F.S.A. Oxford, gave an account of the chief architectural features of Powis Castle, and explained the absence of any visible remains older than the period of Henry VIII. by observing that the edifice had always been inhabited, and modified in every century to suit the wants of its noble occupants. The Earl of Powis added some remarks in explanation of Mr. J. H. Parker's description. Mr. T. O. Morgan then read a paper on the Marches of Wales, and on the division of Wales into counties, *temp.* Henry VIII. This gave rise to an animated discussion, in course of which the president spoke at much length about the Salopian Marches, giving the members some valuable information. The Rev. D. Davies followed with a paper on the Roman remains of the station of Caer Sws, between Newtown and Llanidloes, tending to show that this was the actual site of Mediolanum, which had been much disputed.

On Thursday, an excursion was made to the Roman camp of Clawdd Coch, in the meadows, near the junction of the Vyrnwy and Tanat, and thence to Llanyblodwell, where the party were entertained by the vicar, the Rev. John Parker, and inspected his collection of antiquarian drawings, &c. They then visited the church of Llansantffraid and that of Meifod. At the evening meeting, which was attended only by subscribing members, the annual votes of money, the appointments of officers, and the recommendations of the general committee were considered and passed. A considerable number of new members were admitted, and the treasurer's accounts showed a balance in favour of the Association of more than 25 per cent. on the annual income, after all expenses had been paid. Archdeacon Williams then continued the reading of his paper on ancient Celtic coins, and a discussion followed.

On Friday, an excursion was made to Offa's Dyke and Montgomery. The members were conducted by the Earl of Powis over the castle (*temp.* Henry III.), few walls of which remain, though the lines of works are all distinct. The president then took them to the summit of the Fridd Faldwin, a large British camp on the hill westward of the castle. After hearing a lecture in the church, on its architecture, by Mr. R. K. Penson, the members followed the Earl of Powis to his ancient house in Lymore-park, close to the town, a large black and white woodwork edifice of the Elizabethan era. Here his lordship again entertained them with a sumptuous cold collation; and then took them to see Offa's Dyke, in the park, as being the place where it would be found most perfect. On arriving at the spot, as the *Times* report remarks, his lordship's astonishment and chagrin may be conceived at finding a gang of labourers busily engaged in destroying it, by the order of his own farm-bailiff! The association then proceeded to an Early British castle near the town, and so to the Gaer, a large Roman camp near the Severn, on their return to Welchpool. At the evening meeting, which was the concluding one, and where every seat was occupied, the Rev. Rowland Williams read a paper on the position assumed by the early Welsh Church towards the Saxons. The Rev. H. H. Knight then gave an account of the owners of Powis Castle from the earliest period to recent times; and Mr. Longueville Jones followed with a paper on the towns built in Wales by Edward I. compared with those erected in Aquitaine and Guienne by the same monarch—a subject already treated by him in the *Annales Archéologiques*. The usual votes of thanks were then given and acknowledged, and the meeting finally broke up.

Although the weather was unpropitious during the greater portion of the week, the proceedings of the association did not seem to flag, and the value of the papers has tended to make the Welchpool meeting one of considerable archæological interest.

LONDON ANTIQUITIES IN BRITISH MUSEUM.

THOSE who look in to that comparatively desert space in the British Museum, called the British and Mediæval department, will find that one of the empty cases has been filled with a part of the valuable collection of antiquities which have been chiefly gathered from the Thames and London, after years of patient care, by Mr. C. Roach Smith.

The matters at present exposed to public view are but a tithe of the ancient remains of Old London, which have, by the efforts of the press, and the exertions of a number of individuals, become national property: it is, however, pleasant to look over them.

There are flint arrow-heads, spear-heads, knives and weapons of stone, found in the bed of Father Thames, at Whitefriars, Parliament-street, the Port of London, &c.

Bronze weapons of Roman date, from Thames Ditton, Whitehall, and other familiar places. Some of the swords are in good preservation; and even after the lapse of so many centuries, the scabbards are in part left.

There are Roman fibulæ, some beautifully inlaid rings, &c.; some of these from Botolph-lane, dug up in 1846. There are also lockets, amulets, beads, and other articles of female decoration; Roman keys, from the corner of Moorgate; lamps, little hand-bells, spoons, &c. from the London Docks.

The specimens of glass of various colours are well worthy of notice: the deep rich tints, of blue and purple, are particularly rich. The castings of heads, of fine design, in delicately coloured glass, have quite a gem-like appearance: some of these beautiful objects are from Clement's-lane, and other parts of the City. There are some fragments of old armour from East Smithfield; bronze Celts, and other similar matters, found off the Temple in 1831; Roman and Saxon swords, found off the Temple; small altars; combs, of different width of teeth; Saxon crosses, and other objects of the greatest use, in illustrating the history and manners of ancient London.

Passing from the cabinet which contains the fragments slightly referred to above, and glancing at a few of the most interesting objects contained in this scantily filled department, it is to be regretted that so many objects, some of them of great value, are left without any written description: the consequence is, that persons of even good general information are puzzled to make out what they are, and fail to derive that amount of benefit from the sight of these objects which would otherwise result. To the great masses who visit the Museum, this want of lettered description has still a worse effect, for they pass by things of rare interest without giving them a glance. There are here some articles of art manufacture of very chaste design, and of fine workmanship; amongst them

a blood-stone cup mounted in gold, a flask of lapis lazuli of the sixteenth century, and some cups of rock crystal, richly carved, from the Soane collection: there is an engraved crystal with the following inscription:—"Engraved Crystal, representing the history of Susanna and the Elders: it was made by order of Lothian, king of France, A.D. 954—986, and formerly belonged to the Abbey of Vasor, on the Meuse." In this instance the relic is well described, and it would be a great benefit if the busts of Roman emperors, and the thousand other objects of value and interest contained in the British Museum, were described in a popular manner, and at some length: the place would then be like an instructive and useful book to all who chose to walk through it.

LODGINGS IN LONDON.

WE have had submitted to us a case of such frequent occurrence, and which presses so hardly on a large part of a most valuable and industrious class of the community, that although it may appear somewhat like a repetition of former arguments used on the subject of dwellings for the working classes of the metropolis and other large towns, we give the particulars as they have come to hand.

"You know how inadequate and inconvenient the arrangement of the houses is in London, which are available for the use of persons who are provided with, say half-a-dozen children, and a limited income: there are several thousands in this great place who are either so circumstanced that they cannot get possession, or who would not wish to incur the risk of taking a house saddled with rates and taxes, which are constantly becoming due. Many an honest, hard-working man has brought himself to ruin and beggary by speculating in the taking of a house larger than he requires for his own use, in the hope of letting off the extraneous part to cover the extra expense. The spare places have perhaps been for a long time without occupation, and the trouble with bad-paying tenants leads often to the incurrence of debts, which are a drag during life, and have often been the means of causing executions, which have left families without either furniture or a permanent cover for their heads.

There are also others who are equally sufferers by the present arrangement of the great mass of the dwellings provided for the poorer classes: I mean those who, in order to manage their income and expenditure without risk, engage part of a house, and put up with the troubles of that rather than get into arrears: in this, however, there is but little safety in too many instances. In my own case at present, I have had part of a house for some time, and regularly each week paid my rent: another person has, I believe, done the same. The party, however, who rents the house from the landlord, has not paid rent, as I learn, for half a year, and the arrears of taxes were left to amount to 5*l*. I got information of this, and by paying some charges over and above my rent, I was glad to move away almost like a thief in the dusk, in order to save the articles which are so necessary to my family. On discovering that I was acquainted with the circumstance, the person who rented the house soon moved off, and left the landlord not only minus his rent, but also to pay the amount of taxes above mentioned, and probably, in addition, to make some arrangement in order to get possession of the place.

It is only those who have experienced the difficulty, that can form an idea of the trouble there is of getting quarters when the number of children is large, and the sum of money which can be spared for rent is not more than six shillings or so per week; and yet it is the children of those with limited means who require, more than others, comfort and arrangement in their dwellings. I submit to you, sir, that the houses which are at the service of the great bulk of the married workmen in London are a trouble both to landlords and tenants. Instead of the houses being arranged in the manner they now are, is it not possible to provide sets of rooms which might be let at from 5s. or 6s. to 7s. a week, in which the bedding and other household matters of the tenement would be safe, and where the occupier would have the comfortable feeling that when his rent was paid he would not need to fear the visits of the bailiff from the landlord, or a messenger from her Majesty for overdue taxes.

I could tell you various instances where decent people with families of children have had all their possessions taken away under the circumstances I have above attempted to describe, although they have had the weekly receipt for rent in their hands; and I am sure that he who will show that houses fit for the means of the working man can be made at a fair profit to the speculator, would confer a benefit on the community which it is difficult sufficiently to estimate."

CHURCH-BUILDING NEWS.

Warlingham.—The small and interesting church of Warlingham is about to be restored and enlarged, by the addition of a north aisle and vestry, together with new benches, roof, &c. under the direction of Mr. Withers, of London.

Greenhithe.—On Thursday in last week the Bishop of Rochester consecrated the new church of St. Mary the Virgin, Greenhithe. All the seats in the church, which will accommodate about 500 persons, are open, and there are no galleries. The floor of the nave and chancel is paved with tiles which are coloured black, red, and buff, and laid in patterns. The cost of the edifice is about 3,000*l*.; of which 500*l*. have yet to be raised.

Salisbury.—The Chapter-house of Salisbury Cathedral has been recently restored, but to complete it eight stained glass windows are requisite. Some ladies have agreed to raise the necessary fund—215*l*.—for putting in one of the windows, and Mr. G. W. Digby has agreed to defray the cost of another. Her Majesty has transmitted a donation of 100*l*. towards the restoration of the Chapter-house.

Llandudno.—On 15th ult. the foundation-stone of an Independent chapel was laid in this rapidly-increasing town. The building is to be erected in the Decorated style of architecture, on a site in Tudno-street. The plan consists of a parallelogram 70 feet long by 33 feet 6 inches broad. A large doorway is provided in the front, which enters into a vestibule divided by an ornamental screen from the chapel. Entrance is obtained into two aisles, each 3 feet wide. These aisles run the whole length of the chapel, with ranges of pewing on each side. The total accommodation is for 500 persons. At the end of the chapel is the pulpit, placed in the centre, with a table in front for the celebration of the communion. Behind this is an arch, transmitting light from a triangular tracery window at the back of the recess, which is 6 feet wide and 21 feet long; and a second ornamental screen, with doors leading to a staircase, and conducting to a basement floor, in which is a school, with six windows on each side, and adapted for lectures and public meetings. Public and private vestries are also attached. The length of the chapel is divided into six by buttresses, between which are one-light windows to light the chapel, and two-light windows for the schools under. The whole is covered with a high-pitched roof. The gable of the principal front is filled up by two single-light windows, filled with tracery, with a circular window above the whole. The building is to be erected with stone from the neighbourhood, with Stourton Hill stone dressings. The architect is Mr. Joseph James, of London, and the contractor is Mr. Yates, of Liverpool.

Wolverhampton.—St. John's Church, Wolverhampton, which was rapidly falling into decay, has been under reparation and alteration, and being nearly completed, the edifice was to be re-opened on Sunday last. The architects to whom the direction of the works has been entrusted are Messrs. Bidlake and Lovatt; and the contractors are Messrs. Higham and Mr. Tottey. The windows have been taken out and new leaded: new steps have been placed at the north, south, and west end doorways; the spire pointed; the churchyard-wall repaired, and a lightning-conductor fixed. In the interior, the ceilings have been coloured and the walls painted, the oak-work varnished, the capitals of the pillars, the chancel, the altar-piece, and the windows decorated, and the mouldings in the chancel gilded.

Sutton Coldfield.—The foundation-stone of the church of St. Michael the Archangel, at Boldmere, near Oscott, will be laid on 10th inst. by the Countess of Dartmouth. The church will be erected by Mr. Highway, of Walsall, from the designs of Mr. J. F. Wadmore, of London. The Decorated is the period chosen for the style; and ultimately the edifice will consist of nave, chancel, aisles, tower, and spire; but at present only the nave, chancel, and tower are to be erected, the aisles and spire being omitted, the former until the accommodation is required, and the latter from want of funds. The material to be employed is Rushall stone, and for the roof and other interior fittings stained fir. The seats will all be open, and the major portion free. The architect gives a stone pulpit and an oak lectern. It is intended to erect a parsonage-house near the church, and both edifices are expected to be finished by the 29th of September next, in order to allow the church to be consecrated on St. Michael's-day. Schools for boys and infants are already provided and maintained by the corporation of Sutton Coldfield. The site for the church is given by the Rev. W. K. R. Bedford, rector of Sutton, who also furnishes an endowment amounting to about 160*l*. per annum. The funds for the erection of the building are deficient by about 800*l*.

Heanor.—Messrs. C. and A. Gibbs, of London, have executed a stained-glass window, containing subjects from the life of our Lord, for Heanor Church, near Belper, Derby. The window is a monument to the late Mr. Joseph Barrow and his family. It has been erected by the Rev. Joseph Wolley and family, relatives of the deceased.

Boston.—The opening of a new Unitarian chapel at Bolton took place on Thursday in last week. The building is Gothic, of the Early English period, and of stone. The plan is cruciform, and consists of a nave and two transepts, the nave being continued 11 feet beyond the sides of the transepts. The length of the nave externally is 71 feet 9 inches, and the width 41 feet. The transepts are each 21½ by 15½ feet—the width across the nave being 72 feet. The principal entrance is at the east end of the building. The total height from floor to ceiling is 39¾ feet. A gallery is carried round the chapel, supported by light iron pillars, and open framing. The west end is appropriated to the choir and organ, under which are vestry, committee-rooms, library, &c. A large school is under the chapel. The whole building is to be heated by hot-water pipes.

Doncaster.—The great east window of the parish church at Doncaster, the only one which was wanting to complete the four great windows, is finished. All the windows of the church are now completed. The east is the largest of the four. It has undergone considerable alteration in design, according to the local *Gazette*, since the drawings were first exhibited in 1853. The present pattern is that given in the second edition of Mr. Denison's lectures. The roof of the nave is boarded over and covered with felt. The aisle roofs are in progress, and it is expected that all except the tower space will be roofed over before the end of the year. It must then be determined whether the tower is to stop there, and be covered with a temporary roof until money can be raised to build it up, or is to be carried on at once under the provisions of the present contract. In the former case the tower will probably cost 2,000*l*. more to build, whenever the work is to be resumed, than if it is carried on under the present contract.

Leeds.—The foundation-stones of the two chapels in the Municipal Cemetery for Holbeck were laid on Thursday in last week. The cemetery comprises nine acres of land at Beeston-hill. The soil is a dry shale. The land purchased (in all 11 acres) cost 2,100*l*. The cemetery has been laid out by Mr. Filliter, the borough surveyor. On two sides it is to be enclosed by a stone wall, and on the other sides by a wall and iron palisading. The cemetery itself will be divided into two portions—one-half to be consecrated, and the other half unconsecrated. Upon either portion a chapel will

be erected, and there are also to be two lodges —one for each portion of the cemetery. The chapels (which are to be erected after designs by the borough surveyor) will be in the Early English style of architecture: each will be 25 feet long and 18 feet wide, with an octagonal apse. The total cost of the cemetery, including purchase of land, building of walls, and erection of chapels and lodges, will be about 7,000*l.* to be raised by rates levied upon the township of Hunslet under the authority of the Leeds Improvement Act. The contractor for the erection of the chapels is Mr. Whiteley, of Woodhouse, builder. Their erection is to be completed on or before the 1st of December next.

Redcar.—The window erected in the church of this sea-bathing place to the memory of a late incumbent is thus described by a correspondent of the *Leeds Intelligencer*:—The window consists of four lights, cinquefoiled, with foliated eyelets filling up the head. The centre eyelet contains the pelican feeding its young with its own blood. The window may be said to be formed of two fenestellæ, each one consisting of two lights, and bearing in the head a quatrefoil. Each of these quatrefoils contains the sacred monogram I. H. S. Commencing on the north side, or the left hand, the first light has in the head the I. H. S. beneath the Evangelistic symbol of St. Matthew—namely, an angel bearing a scroll; and beneath this an effigy of that Evangelist under a highly enriched canopy. The Evangelist is clad in a rich green robe lined with amber, and under that a dress of blue. He carries in his hand a book, in which he is represented as writing. The second light contains the symbol of St. Mark—namely, the ox; and beneath it, under a canopy of the same outline as the former, though of varied colours, the effigy of that Evangelist. He is represented in an outer garment of pale maroon, lined with green, and an under coat of red. He holds a book, in which he is reading. The third contains in the upper part the symbol of St. Luke, a lion, and beneath it, within a niche similar in all respects to the former one, a representation of that Evangelist. He appears in a vestment of red lined with blue, covering one of a rather pinky hue. He holds in one hand a book, and in the other a pen, as does also St. John. On the extreme right there is the same I. H. S. with a symbol of St. John, namely, the eagle. The niche is similar to the one on the extreme left, and bears the figure of St. John, robed with a garment of amber lined with green, and, underneath, one of blue. Beneath these are four medallions, which, taken in the order already observed, bear representations of St. John the Baptist, our Lord, St. Peter, and St. Paul, each with some characteristic mark,—namely, St. John with his dress of camel's-hair and the vefillem; our Lord in the act of saying, "Come unto me all ye that are heavy laden, and I will give you rest;" St. Peter with the keys; and St. Paul with a sword. Our Lord is distinguished by the ray of glory in the form of the cross. At the foot of the window runs the inscription in old text. The flood of light which pours into the church from the south to a very considerable extent damages the effect. Mr. F. Barnett, of Edinburgh, was the artist who produced the window.

Knaresborough. — Trinity Church, Knaresborough, consecrated on 18th ult. is of Early Pointed character, and stands at the south-eastern extremity of the town. It has been erected at the cost of about 3,000*l.* obtained by subscriptions, together with grants from societies. It consists of nave, with clerestory, chancel, north and south aisles, north porch, organ chapel, and vestry. The tower is engaged at the western extremity of the north aisle, with two arches opening into the church. The seats in the nave, accommodating 400 adults, are entirely free. The church in all, as before noted, accommodates 800 persons. The architect was Mr. Jos. Fawcett, of the firm of Mitchell and Fawcett, Sheffield.

Ugthorpe.—A new church has been opened at Ugthorpe, near Whitby. The building is of the fourteenth century, cruciform, with a bell-turret and spire at the west-end. The font is the gift of Archdeacon Churton, and is of Caen stone, the basin octagonal. The site was given by Mr. James Hindson, of Ugthorpe. The church is built entirely of stone, from Stonegate, presented by Mr. Wm. Hill.

Jarrow.—Arrangements are being made for the erection of a new United Presbyterian Church at Jarrow. It will be built of brick, and capable of containing nearly 400 persons. There will also be a school-house attached.

Wigan.—The new cemetery for the town of Wigan is now nearly complete, and was lately consecrated. It is situated about a mile and a quarter from the market-place, in the township of Ince-in-Mackerfield, and consists of eighteen acres of land, enclosed with a stone wall, 6 feet high, except a small portion at the eastern end, which forms the entrance, where there is a semi-circular dwarf wall and iron railing, together 6 feet high. A road 12 yards high has been formed from the highway to the entrance of the cemetery, the railway cutting being crossed by an iron girder bridge, of three spans or arches. On either side of the entrance-gates a lodge has been erected, in the Early Domestic style. From the entrance-gates to the west end of the cemetery, a carriage-way has been constructed, and eight acres of ground on the south side are appropriated for the use of the Church of England. On this ground the episcopal chapel is erected. On the north side of the road lie ten acres, appropriated, six acres to the Roman Catholics, and four acres to the Dissenters—the only separation between the two being a winding road. The episcopal chapel consists of a nave, 33 feet by 22 feet; chancel, 16 feet square; and a vestry at the south-east angle, 9 feet by 8 feet 9 inches. The porch is of ornamental timber, and adjoining it rises an octagonal turret, surmounted by a stone spire, the total height of which is 59 feet. The windows on the north and south side of the nave are trefoliated lancets, with mullions and drop arches internally. The chancel window on the east is of three lights, filled with light geometric tracery. The chapels on the Roman Catholic and Dissenters' portions of the ground are precisely similar in plan and general arrangement. The cemetery was opened on the 1st of September.

Forgue.—The *Banffshire Journal* states that the foundation-stone of St. Margaret's Episcopal church, Forgue, was laid on the 21st ult. by Mrs. Morison, of Bognie. The church is already in course of erection on a site given by Mr. Morison, with space for a burying-ground around it, besides a site for a parsonage with a garden attached. Mr. and Mrs. Morison also contributed largely towards the building fund. The church has been designed by Mr. William Ramage, of Aberdeen, architect, and lithographed by Keith and Gibb, of Aberdeen. The style is Early English, sharply pointed. The church consists of nave and chancel distinct; the former 56 feet by 24 feet, the latter 28 feet by 18 feet, entered from the nave by an arch of Auchindoir freestone, of which material the whole of the dressed work is to be constructed. There are buttresses of it all round, double at the corners, and one between each window. The windows are single and double lancets alternately on the north and south walls, with two single lancets and a trefoil in the west gable, and a window of three lights at the east end. On the south side is a porch, and the sacristy, under which is the heating chamber. On the north side, at the junction of nave and chancel, is the tower, of three stories, square, surmounted by a solid hexagonal spire with vane, measuring in all, in perpendicular height, 100 feet. On the base of the tower is the organ-chamber, which opens into the choir by a stone arch. The chancel is to be paved with encaustic tiles, and fitted up with stalls for the choir. The roof is equilateral. The mason is Mr. John Thompson, of Forgue. The carpenter work is to be executed by Messrs. W. and J. Cooper, of Huntly. There are no funds at present to finish the spire or to fill the windows with stained glass.

FRENCH MODEL LODGING-HOUSES.—There is some idea of undertaking a vast enterprise, which is said, according to the *Siècle*, to have received the approbation of the Government. It is, to erect, just within part of the fortifications, 2,500 houses, in groups of fifty, which would thus give fifty villages, each forming a sort of square. Each house is to accommodate six workmen's families, at a rent to each of not more than 150 francs.

PROVINCIAL NEWS.

Peterborough.—The Great Northern Railway Company, it appears, are about to build another row of fifty houses at "New England," for the accommodation of their servants, which, when complete, will make 150 houses. At the last half-yearly meeting, the shareholders agreed to a vote of 700*l.* for building a school for the instruction of the children of the occupants.

Yarmouth.—There is, it is said, every prospect of the projected new pier, at the end of the Regent-road, being carried out. The proposed structure will be of timber, and will commence at low water mark, whence it will run out into the sea some 500 feet, or nearly double the extent of the Wellington Pier. It will be 25 feet wide, being 5 feet narrower than that pier, and will terminate in a round end instead of a T end. It is also proposed to erect refreshment and waiting rooms, with every convenience, at the land end. A concrete road will lead across the beach from it to the Regent-road. The total estimated cost is about 4,000*l.* of which more than half is already privately subscribed or taken up. The new Britannia-terrace will be completed for the entire range; and a little to the north it is intended to erect a first-class hotel, with *tables-d'hôte* upon the continental principle, and bath-house, &c.

Cambridge. — At a recent meeting of the Visitors of the Cambridge Pauper Lunatic Asylum, a long discussion took place upon the report of the architect that glazed bricks for lining the corridors, day-rooms, and other internal portions of the building could not be obtained, unless at an enormous expense, and recommending the substitution of plain bricks for some portions of the work, and Parian cement for other portions. Mr. Hill's "characteristics" of his plan, according to the local *Chronicle*, were referred to, one of which was to the effect that all corridors and day-rooms, store-rooms, workshops, chapel, kitchen, laundry, brewhouse, &c. &c. being lined with glazed bricks, would save both painting and lime-washing, and subsequently avoid a large yearly expenditure for repairs. These glazed bricks were provided for in the contract, and the Visitors considered that such a very important item ought to be forthcoming, and expressed their sentiments very strongly upon the subject, both to architect and builder. Mr. Jones (the architect) and Mr. Webster (the builder) explained that glazed bricks could only be obtained at a cost of 12*l.* per thousand, delivered at Cambridge; and Mr. Jones stated that in making his calculation he took it for granted that any brick clay would readily take glaze, and that the expense would not be increased by more than 2s. 6d. or 3s. per thousand. At length it was determined to adopt so much of the report of Mr. Jones as recommended the omission of glazed bricks, and the substitution of plain bricks, a corresponding amount being deducted from the contract sum, and the architect and builder undertaking to finish the chapel in stucco if required, without its being considered an extra. Arrangements are about to be made for laying the foundation-stone.

Worcester.—The Streets' Committee of the Worcester City Council have resolved to accept the tenders of Mr. Richard Barrow, of Chesterfield, for contract No. 1 (iron pipes for the waterworks); of Mr. John Aird, of Southwark, for contract No. 2 (pipe-laying for the waterworks); of the Haigh Foundry Company, near Wigan, for contract No. 3 (engines, pumps, and machinery for the waterworks), for the sum of 2,500*l.*; and of Messrs. Wilkinson and Beard, of Newcastle-under-Lyne, for contract No. 4 (the sewage works), for the sum of 14,684*l.* 10s. 8d. Mr. Hawksley had stated that the result of the competition indicated that the cost of the works would be within the amount of his preliminary estimate. It was resolved to recommend the Council to advertise for a sum of 10,000*l.* to be advanced immediately, and another sum of 10,000*l.* to be advanced in January next, on mortgage of the special district rates, the principal and interest to be paid off by thirty equal instalments. The purchase of the site of the engine-house, filtering-beds, &c. being in a forward state, the Council was recommended to

advertise at once for tenders to execute the works.

Gloucester.—Public baths are about to be provided for Gloucester. Plans have been prepared, and it is intended to construct the building on the most approved principles. There will be first and second-class baths for ladies and gentlemen, and a swimming-bath, about 70 feet long and 30 feet wide, with a fountain in the centre. The front of the building has been designed by Messrs. Jacques, of Gloucester.

Swansea.—The Ferry-side National Schools were opened on Tuesday in last week, and are now nearly completed. The buildings are erected on a site given by the Earl of Cawdor, near the railway station. They are in the Mediæval Domestic style of architecture, built of limestone, with Bath stone dressings, and consist of a girls' and infants' school-room, boys' school and class-rooms, with separate entrances and lobbies, a residence for the schoolmaster and schoolmistress, and lodgings for the curate of the parish. The girls' and infants' school is in the clear 30 feet long by 18 feet wide, and the boys' school 33 feet by 20 feet, and they are so arranged as to be capable of forming one large room by means of folding-doors. The roofs of both school-rooms are open to the ridge, and are constructed with principals of an arched shape. The ceiling is formed between the common rafters or spars, and the whole of the timbers being thus exposed to view are wrought, stained, and varnished. The buildings are covered with stone tiles and ornamented ridges. At the junction of the roofs over the schools there is a bell-turret of stained timber, with pointed roof, rising to a height of 18 feet from the ridge of the roofs. The buildings have been erected by Mr. Jenkins, of Ferry-side, from the designs and under the superintendance of Mr. R. K. Penson, of Swansea, architect. The building-stones, roof-tiles, and a portion of the haulage were given by the parishioners.

Birmingham.—The town council of Birmingham have unanimously resolved to purchase Aston Park and Hall, the seat of the late Mr. J. Wall, as a place of public recreation, if the price demanded be reasonable. Lord Calthorpe has also, in imitation of a similar act of generosity by Mr. Adderley, M.P. placed the land he proposes to set aside as a public park at the disposal of the council, without restriction of any kind, relying on the good sense of the people of Birmingham for its proper use and conservation. Birmingham will thus be shortly supplied with public grounds and promenades, where its industrious artisans may breathe the fresh air within the shortest possible distance from their workshops and manufactories. The Adderley Park has already been opened.

Salford.—The newly-formed company for the erection of public baths and laundries, in Manchester and Salford, opened the first of their intended establishments on Wednesday in last week, in Collier-street, Greengate, Salford. The building is of brick, with stone dressings, in the Italian style. It contains a large number of first and second class private baths for men and for women, besides two large tepid swimming-baths (first and second-class); and in the laundry department there are thirty-eight washing places. Each class of baths has its own waiting-room, suitably furnished, and a separate entrance and staircase.

Bradford.—The town council of Bradford, after resolving to unite the offices of borough surveyor and manager of the waterworks, have appointed Mr. Charles Gott their temporary surveyor to both offices, at a salary of 200*l.* a year. They also, at same meeting, resolved to advertise for an assistant surveyor or clerk, at 120*l.* a year.

Dundee.—At a recent meeting of the Committee of Corn Exchange and Public Hall subscribers, the tenders for erection of the Corn Exchange and Public Hall, on the site in Bank-street, were finally accepted, and the buildings will be immediately proceeded with by the contractors. The hall will be capable of accommodating from 1,800 to 2,000 persons sitting, or about 5,000 persons standing; and will be so arranged by the proprietors, as to be available for concerts, assemblies, public meetings, and other similar purposes.

THE MINISTERIAL *NON*-RECIPROCITY SYSTEM.

I HAVE no more interest in the architectural profession than with the profits of any other class of her Majesty's subjects; but *until her Majesty's Ministers are selected by competition from the best qualified of all other nations,* I must protest against foreign competition in designs or erection of national buildings; and I trust the British architects will act upon their rights as British subjects. I need scarcely add that the existing non-reciprocity system connected with our commercial economy should be promptly corrected, or John Bull will not have an ounce of gold or silver left in his money-chest. OBSERVER.

THE accidental discrepancy between the number of premiums stated (eighteen) in the conditions we printed last week, and the actual list of premiums recited (fifteen) was not a mistake of ours. We printed the terms exactly as they were stated to the meeting. The list (of fifteen) is correct.

COFFEE AS A DEODORISER.

Now that the "sporting season" has again come in, we beg to remind sportsmen and others that fresh-ground coffee is a perfect and safe deodoriser: a sprinkling will keep game fresh and sweet for several days. Clean your game,—that is, wipe off the blood,—cover the wounded parts with absorbent paper, wrap up the heads, and then sprinkle ground-coffee over and amongst the feathers or fur, as the case may be: pack up carefully, and the game will be preserved fresh and sweet in the most unfavourable weather. Game sent open and loose cannot, of course, be treated in this manner; but all game packed in boxes or hampers may be deodorised as described. A tea-spoonful of coffee is enough for a brace of birds, and in this proportion for more or for larger game.

Fresh-ground coffee may be used with advantage in a sick room; a few spoonfuls spread and exposed on a plate: burned by a red-hot iron it is a safe and pleasant fumigator.

Should any of our sporting friends care to send us any game from the moors, we hope they will not forget the coffee.

"SEWERAGE AND STORM WATERS."

THE question of sewerage still continues the theme of the day, and, undoubtedly, much practical science was to be developed to perfect a system of town and local drainage. The most economical course for the general sewerage and drainage of a district is of paramount importance, more particularly in extended flat districts, where artificial means must be resorted to, and expense in perpetuity incurred, for raising and disposing of the sewerage. Having given much attention to the separation of surface drainage and storm waters, from the general sewerage of a district, I am led to the conclusion that such would be attended with good results, and a large outlay of capital may be saved in projecting new works. Practice confirms the area of sewers to be determined in accordance to the maximum quantity of sewage to pass through them, to which must be added a greatly increased area to provide for storm waters. But why incur such an expense in the discharge of storm waters, when nature allows of so many sources of exit?

I would suggest the surface drainage and storm waters to be so collected by a series of terro-metallic pipes, having established communication with the sewers, that they may be flushed as circumstances require, and natural outlets made use of for the discharge of these waters; thus saving, particularly in low-land districts, excess of area in the required sewers, an unnecessary area in storage reservoirs at the termini, and, above all, much of the unavoidable expenses in pumping-apparatus. In the first outlay the saving in the sizes of the sewers would much more than cover the required outlay for a trunk and intercepting line of pipes; and for the purpose of discharging the first hour's flush of street *débris*, in heavy rains and casual storms, I propose, as a substitute for the ordinary street gullies, to introduce a circular well, say, 2 feet 6 inches in diameter, and 3 feet 6 inches deep; the bottom being a cast-iron basin, having a 6-inch aperture into a culvert communicating with the sewer, the aperture to be closed by means of an ordinary wooden plug, coated with gutta percha. Through this well the storm waters line of pipes would pass, an aperture being provided for the water to flow from the well into the pipe, on plugging the iron basin after disposing of the street refuse-matter. The well would always be charged with water to the level of the aperture into the pipe, and thus most effectually suppress the return of nauseous vapours from the sewers. A series of stop-cocks for flushing the sewers at will, and making use of every natural outlet for the discharge of the water, carries out my idea.

GEORGE AUGUSTUS DIXON.

GALLERY, HOTEL DE VILLE, PARIS.

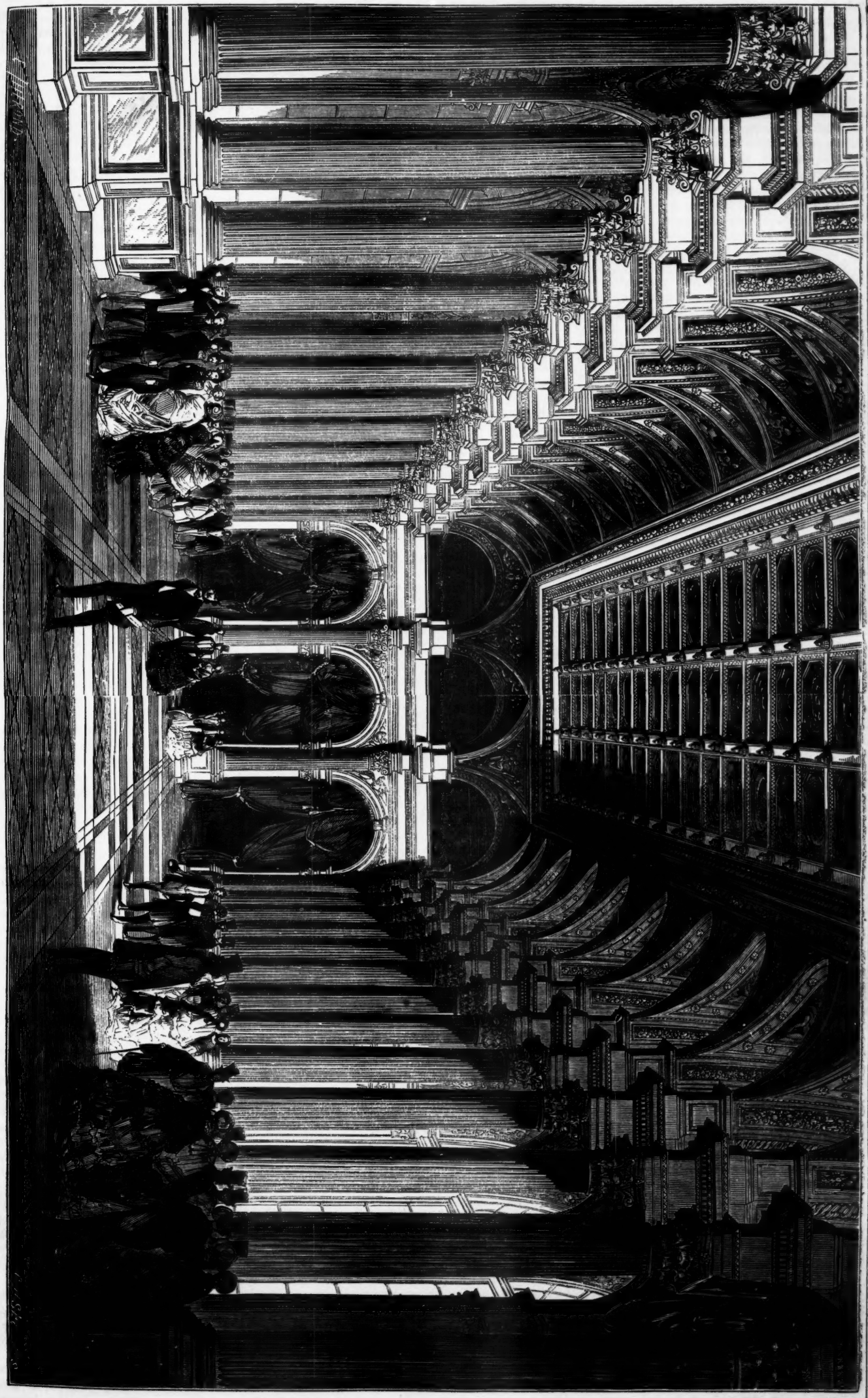
THE first stone of the Hôtel de Ville, at Paris, was laid on the 15th of July, 1533, by the *prévôt* of the merchants of Paris. The original design, in the Gothic style, however, was not advanced in execution beyond the second story; a new project having been presented to Henry II. in 1549, by Domenico Baccadoro, called "of Cortona." The work then proceeded slowly, and was not completed till 1609, under Henry IV.—and then, even, did not include more than a fourth of the existing building. The main building—flanked by two pavilions with high roofs—was in two stories, surmounted by a balustrade, and had an elegant bell-turret, decorated at the base with allegorical sculpture. Two ranges of superimposed composite columns enriched the façade,—each intercolumn of the one-pair story having a niche, now filled with sculpture. Above the gate of entrance was placed an equestrian statue of Henri Quatre, in gilt bronze, by Biard. This statue was said to have been destroyed during the Revolution, but was replaced in the reign of Louis XVIII. Sculpture, also, was inserted in the tympana of arches to other entrances; and altogether an elegant and picturesque combination was realized by the general design, with the high-pitched roofs having lucarnes richly ornamented. The *façade* remained till 1830, as Domenico da Cortona had left it.

Under the reign of Louis Philippe, the accommodation of the Hôtel being found deficient, the architects Godde and Lesuer were charged with the direction of great works for the completion and enlargement of the building. In these, they observed as much as possible the style and decoration of the work of Domenico da Cortona. To the building which has been described, they added upon the principal *façade* two new blocks of building, connected with the original pavilions. The eastern façade is copied from that of the west, omitting the bell-turret, and the high-pitched roof.

The halls of reception are situated in the one-pair story, next the quay and the square, and consist of the "Salle du Trône," the "Salle des Arcades," the "Salle de l'Empereur," and the Yellow and Blue *Salons*, the two "Salons des Arts," the "Salle des Cariatides," the "Salle de la Paix," the two "Salons des Prévôts," and the grand "Galerie des Fêtes," of which we now give a view. This gallery is about 160 English feet in length, 43 feet 3 inches in width, and 40 feet in height. It is lighted from the street by thirteen windows, in arcades. The decorative character of the gallery is given by an order of Corinthian columns, serving as the support to the cove which carries the *plafond* or ceiling of the hall,—the tribunes, or window recesses, being arched over from column to column, the arches breaking with the cove. The tympana or spandril spaces in the cove, between the archivolts, are designed to receive painted figures. The general decorative enrichment is in white and gold.

The gallery communicates with the "Salle des Cariatides," and opens upon the grand staircase,—thus, during a *fête*, a grand effect is realized by the spectator.

NEW MANSION AT CURRAGHMORE.—The Marquis of Waterford is going to erect a costly mansion at Curraghmore, near Waterford.



GALLERY, HOTEL DE VILLE, PARIS.

METROPOLITAN BOARD OF WORKS AND THE DISTRICT SURVEYORS.

At the last meeting of the Board a recommendation from the superintending architect, to the effect, that the district surveyors should be ordered to report *quarterly* to the Board, and also to the Vestries and District Boards, in terms of the statute, 103rd section, Local Management Act, all cases in which underground rooms or cellars are let or occupied as separate dwellings, contrary to the provisions of the statute, was received, and will be brought up for confirmation at the next meeting. Surely, the district surveyors should have had some opportunity afforded them, to make a statement on this subject to the Board before such a determination was come to. It is true the Local Management Act directs, that the district surveyors shall, without fee or reward, report as to such dwellings at such times as the Metropolitan Board "may" order, but it was always felt that the duty being altogether different from that which properly belongs under the Building Act to the district surveyors, appertaining rather to the police or inspectors of nuisances than to structural surveyors, the Board would be led to place the matter on some other footing. To perform the duty strictly, in some districts, would positively absorb the whole time of the district surveyor; because, inasmuch as the Act sets forth, that "every room or cellar in which any person passes the night, shall be deemed to be occupied as a dwelling within the meaning of this Act," the supervision would require to be constant.

It is to be hoped that the Board will reconsider the matter before coming to a determination.

FOREIGN AND COLONIAL NEWS.

Assyria. — The well-known M. Kiepert, of Berlin, has delivered a public lecture on the survey of Assyria, made by English engineers (scale $\frac{1}{73000}$). It comprises that portion of the country where the well-known antiquities have been discovered, and which extends over an area of 30 square miles. The map shows about sixty ruin mounds, scattered on the banks of the Tigris; and there are added large plans of the ruins of the large cities of Nineveh, Nimrud, &c. As the size of Nineveh has been accounted far too large by the ancients, Ktesias and Strabo, as it is only half the size of Berlin, and about that of Cairo — the plan of Rome by Blondel may lead to interesting comparisons.

Swiss Industrial Exhibition.—There will be an exhibition at Berne for 1857. The Central Government of the Republic has granted 30,000 francs, the municipality of Berne 2,000 francs, and the subscriptions hitherto amount to 40,000 francs. The necessary steam power will be provided for the motion of machines, &c.

Bavaria.—Roman Ruins.—By the sinking of a well near Ingolstadt, adjoining the Devil's Wall (*vallum Romanum*) and the old Roman road, part of a mosaic pavement, several canals, and a *compluvium* (reservoir of rain-water), were discovered. The excavations, made most carefully, have exhibited a pavement of great beauty, the hitherto exhumed area of which exceeds 800 square feet. The designs represent marine deities, tritons, nymphs, riding and aquatic animals, &c.

Trinidad.—The great Asphalte Lake.—This curious lake lies near the village De la Braye, the houses of which are built of asphalte. Not far off are also springs of natural naphtha. Combined with sand and rubble, the asphalte forms a good paving for the city of Puerto de Espagna. It is intended now, however, to utilize it on a large scale, and by mixing the asphalte with chips of wood, to obtain every year 5,000 tons of a superior fuel, by which the West-India steamers could save much of the coal they are obliged now to carry with them from England.

Bavaria.—Practical Education of the People.—The King of Bavaria has ordered, by the Secretary of State for Home Affairs, that the places where Roman roads have been discovered, as well as the localities where Roman mosaics or other antiquities have been found,—in fine, all ancient camps, amphitheatres, &c. shall receive substantial tablets, for properly fixing the attention of travellers as well as inhabitants. These tablets have also to contain the date and other short particulars about the historical remnants thus marked for public attention. [This example ought to be followed.]

Sydney University.—The Legislative Council of New South Wales have made ample provision for this head educational establishment of the five confederated provinces of Australia. The architectural plans, now in this country for professional inspection, are said to exhibit thought and art. The Sydney Legislature have granted an area of some twenty acres of land to the university, so much indeed, that extensive plantations, like the old *Academy* of Athens, will surround it, and make it worthy of its high destiny. Upwards of 100,000*l.* have been already voted for the building, library, &c. Dr. Charles Nicholson has been elected the first president of Sydney University.

Important Invention in Stereotypy.—One of the persons employed in the State's printing-office of Vienna has made the discovery that plates of plaster of Paris will *uniformly* contract by a repeated washing with water, and still more if with spirits of wine. On this is based a process to produce both print (*Drucksachen*) and wood-cuts in various gradations of type and size, by a calculated diminution of the plaster of Paris plate. Already print and drawings have been made of a twelfth-part size, reduced from 3 inches to 1 inch in diameter, and yet even the reduction to the smallest size does not encroach on the perfect correctness of the impression.

SCENERY AT THE PRINCESS'S THEATRE.

MR. CHARLES KEAN, in the production of Sheridan's "Pizarro, or the Spaniards in Peru," has achieved another legitimate and very great success. If we are to judge from the manifestations on the first night, we may augur for it a run equal to that of the play which preceded it. In the production of this piece, the manager has not failed to avail himself of all available information, and to set forth the actual state of the people. As Mr. Kean writes in his fly-leaf, "Pizarro and his followers had found the kingdom of the Incas inhabited by an industrious, disciplined, population, united under the sway of a paternal government, possessing numerous works of art, and many national memorials. While Nature appeared to revel in her grandest and most picturesque aspect, the land abounded with precious gems and metals, to such an extent, that amidst the gardens of temples and palaces, trees and plants of gold and silver, most exquisitely manufactured, stood intermingled with natural productions. Birds of the same costly materials were seen upon the artificial branches, and the interior of the great Temple of the Sun, the most magnificent structure in the New World, was probably unsurpassed in the richness of its decorations by any building in the Old."

"By the recent excavations in Assyria, entombed races were raised before the eyes of the living; while, through the adventurous and unscrupulous spirit of the Spanish conquerors of America, in the sixteenth century, vast nations, buried in obscurity, unknowing and unknown, were revealed in active existence, occupied with the pursuits of cultivated life. We read, with surprise mingled with awe, of an extensive empire, whose mysterious origin is lost in the labyrinth of ages, confined within its own limits, seeking no external intercourse,—of a people dwelling in towns and hamlets, clustered amidst orchards and gardens, constructing canals and subterraneous aqueducts, carrying roads over plains and across mountains, forming beautiful terraces on the sides of the Cordilleras, which bloomed with every variety of vegetation,—rich in flocks, that supplied garments of the finest wool, victims for the altar, and viands for the banquet,—erecting palaces for their Incas, and temples for their God, with a profusion of wealth within the walls that almost rivals the marvels of Arabian fable,—and, what is most remarkable, enjoying the intellectual and refined amusement of a poetical drama."

The play involves less architectural scenery than preceding revivals, but due attention has been paid to correctness where it has been introduced. There is a marked difference between the remains of buildings existing in Peru and the extraordinary monuments of Central America; and this has not been lost sight of. Mr. Fergusson, in his excellent "Handbook of Architecture," has a discriminating chapter on this subject, wherein he points out, among other things, the remarkable similarity in style that exists between some of the Peruvian buildings and the Pelasgic remains of Italy; but it would take us from our present purpose to pursue it.

The sun being the great object of adoration amongst the Peruvians, the luminary has been looked to for the main scenic effects in the piece; and the new lights which science has given to the drama have been brought in powerfully to aid them, as in the second scene of the second act, "The Interior of the Temple of the Sun;" and again in the fourth scene of the third act, "The great Square of the City of Cuzco," where the rising luminary, first touching the distant cordilleras, and then the gnonoms set up in front of the temple to receive its early rays, ultimately renders the whole scene a blaze of light and splendour. The gardens of the royal palace, with its raised terraces forming a pyramid in stages, and some of the mountainous landscapes, are especially beautiful. Mr. Grieve has executed much of the scenery with his own hand, and has been ably seconded by Mr. Gordon and Mr. F. Lloyds. Mr. Kean's *Rolla*, and Mrs. Kean's *Elvira*, are admirable pieces of acting: the former threw an amount of energy and power into the part, which those who best know the labour, care, and anxiety that must fall to the manager in such a production of a play, will most wonder at.

The grouping throughout is beautiful, and presents a series of artistical pictures; for example, at the death of Orozembo (very effectively played by Mr. John Cooper), when the Peruvians are waiting with outstretched arms for the appearance of the sun, and the return of the warriors to the women in their rocky retreat.

SINGULAR INSTANCES OF SPONTANEOUS (?) COMBUSTION AT BEDFORD.

WITHIN the last week or two great excitement has prevailed at Bedford, in consequence of a series of separate and distinct fires, about forty in number, having successively broken out in a house in Horn-lane there.

The house is inhabited by a person named Morton, a commercial traveller, and his family. In the absence of her husband from home, Mrs. Morton had fumigated the house with burning sulphur, with a view to get rid of a notorious domestic pest—better known, perhaps, in London, than even in Bedford. By some accident a vessel containing the melted roll sulphur leaked, and the sulphurous fluid escaped into a basinette, burnt through the bottom, fired the floor, and ate its way through the planks. Timely observation and alarm availed to arrest the progress of this fire, and all was deemed safe.

"An hour and a half," says the *Bedford Times*, in narrating the circumstances, "served to dispel this delusion: the mattress, feather-bed, and the contents of a chest of drawers, successively took fire, and caused great anxiety in the minds of the household, who remained up the whole of the night. No more outbreaks occurred that night; but on the following morning, about eight o'clock, some dirty linen in a room up stairs was discovered to be on fire. The flames were subdued, and the damaged articles thrown into the yard. The premises were strictly watched, but no more fires took place on that day, and it was then thought that no further danger was to be apprehended. In the meantime Mr. F. Howard communicated with Mr. Morton, who returned on Saturday. No outbreak had occurred since the previous Wednesday morning, but Mr. Morton, before retiring to rest on Saturday evening, threw his stockings and other wearing apparel, which were damp, on the carpet in the parlour, and on the following morning, to his astonishment, they were found burning. The marvels of the previous Tuesday evening were then resumed. About eight o'clock a fire was discovered in the boy's room, as well as in the bed on which the master and mistress of the house had been sleeping. Soon after a succession of fires took place, not only in every room and closet in the house, but from drawers, boxes, and cupboards smoke and flame were seen to issue in the most extraordinary manner. Several gentlemen and friends of the family were called in to witness the wonderful phenomena, and many of the outbreaks occurred in their presence; but all attempts to unravel the cause of the fiery visitations proved unavailing. Indeed, the fires took place so rapidly and in so sin-

gular a way, not only with respect to articles belonging to the occupier, but the handkerchiefs of some of the visitors were scorched by contact with the inflammatory spirit which seemed to pervade every part of the house, until at length the parties began to fear for their own personal safety, and to ask themselves whether they were not about to become the victims of spontaneous combustion. Dr. Barker, whose advice was sought on the Sunday, visited the premises again on Monday with Mr. Blower. As the cause of the fires seemed to be wrapped in the greatest mystery, the two medical gentlemen waited upon the magistrates who were then sitting in Petty Sessions at the Shire Hall. Mr. Blower briefly related the circumstances of the mysterious fires, and suggested to the Bench the propriety of holding an investigation by Mr. Eagles, the borough coroner."

An inquest was accordingly held, and after a good deal of evidence had been heard, the jury, having consulted about half an hour, returned the following verdict:—"That the fire on Mr. Alfred Morton's premises was accidentally caused by incautiously placing and setting fire to a quantity of brimstone in a pot, the same being placed in a bassinet situate on the first floor of the said premises; but as to the cause of the continuation of fires on the said premises, we have not sufficient evidence to show."

In course of the inquiry, a chemist and druggist deposed to his belief that the fires were produced by spontaneous combustion. Dr. Barker gave his opinion that "there was a something pervading that house which produced spontaneous combustion." Mr. W. Blower, surgeon, said, "there was something in the atmosphere which caused the spontaneous combustion which has been spoken of."

The prevalence of thunder, and the consequent production of an abundance of ozone or active oxygen in the atmosphere this year, may have rendered this a summer predisposing to spontaneous combustion; but since the fumes of burning sulphur produce a smell precisely like that of ozone, may not the burning of sulphur in a confined atmosphere, in such a summer as this, have doubly charged that atmosphere with ozone itself, and so predisposed combustible materials in the house for a time to take fire spontaneously? There may have been some trickery at work, however, in the production of such unusual phenomena.

COMPETITIONS.

Windsor Cemetery.—Twenty designs were received by the Burial Board, and from these the committee have selected one, with separated chapels, by Messrs. Poulton and Woodman, estimated to cost 1,350*l.* The chapels are in the Decorated style of Gothic architecture, and are intended to be constructed of rag stone with Bath stone dressings. At each end of the buildings are large traceried windows. The roofs are to be open, and, as well as the internal fittings, to be stained and varnished. The episcopal chapel has, over the entrance, at the north-west tower, a bell tower, terminating in a light spire of considerable altitude. One of the leading features in the Dissenters' chapel is an ornamental timber porch. A robing-room is provided for each of the chapels. The stone panelling under the windows, is arranged so as to receive tablets for monumental inscriptions.

COMPETITIONS IN IRELAND.

Naas Gaol.—The premium of 50*l.* for the best plans for enlarging and improving Naas Gaol, has been awarded to Mr. John M'Curdy, of Dublin. The plan adopted proposes the erection of a new wing, giving the requisite increased accommodation on the separate system. The old wings are to be connected by corridors to the central building, which is to be converted into an inspection hall; the whole to be open from ground-floor to roof, with iron galleries to each story. The cost will be about 9,000*l.*

Londonderry.—A new bridge is to be built at Londonderry, for which premiums of 200 and 100 guineas are offered respectively for the first and second best designs. Sir William Cubitt is to decide.

CAST-IRON PILING.

THE first application of cast-iron piling is due to the late Mr. Robert Sibley, who employed it for the first time at the Island Lead Works, Limehouse, the brick-faced wharf having given way, and it was entirely successful. Mr. Sibley was then employed by Mr. Chadwick at Fenning's Wharf, London-bridge, which he supervised, and notwithstanding the considerable depth of water, and tide, made a successful work of it. Shortly afterwards, Mr. James Walker, slightly modifying only the form of pile, and using sheet-piling, executed the Blackwall Wharf.

Mr. Sibley designed several bridges, which he proposed to execute in this way, as also to repair existing ones, without having recourse to coffer-dams. He had a favourite idea that the embankment of the Thames might be successfully carried out in this way.

In cutting into this work (iron piling), it has been found that an intimate chemical union has taken place between the lime in the concrete backing and the iron piles and plates,—so much so that the lines of separation could not be traced, the whole forming one solid mass.

No appreciable effect after the first oxydization has been observed on the face of the iron. The ends of the piles were not pointed, but square, for driving.

PALMAM QUI MERUIT FERAT.

SIR C. BARRY AND THE GOVERNMENT.

ARCHITECTS' REMUNERATION.

ALL members of our profession must agree with your remark that we all suffer by the very illiberal and government-like treatment to which Sir Charles Barry has been subjected; and as Sir Charles in his letter says that he accepts because "it is evident that no *individual* could with the least chance contend against the Government," I beg to propose, through your columns, that a subscription be immediately set on foot to support Sir Charles in any legal opposition to such piratical treatment. I am only a poor member of the body, but there are, I believe, now rather more than 8,000 of us in the kingdom, and, as a nucleus, I enclose you my name for 5*l.*

A COUNTRY ARCHITECT.

*** The question has been closed by Sir Charles, but we print the foregoing to show the feeling of the profession.

I HOPE you will print the *reply* of the honorary secretaries of the Royal Institute of British Architects (July 24, 1856) to Mr. Wilson's special pleading letter of July 15 to them, already published by you, just to show that the council have not been hoodwinked by his Jesuitical arguments in the Westminster Palace matter. ARCHITECT.

The reply in question, after acknowledging receipt of papers mentioned in Mr. Wilson's letter, says,—

"Both these documents will be submitted to the council of the Royal Institute of British Architects at their next meeting: the correspondence embodied in the latter has, however, already been before them, and it was only after a careful examination of the whole of the Parliamentary Papers connected with the subject that the council arrived at their own conclusions thereon, and framed and unanimously adopted the resolution in question."

In the Parliamentary paper wherein this reply is printed, it is headed, "From the Royal *Society* of British Architects, to James Wilson, Esq. M.P." This want of correctness, of which there were other instances in the letter we have already printed, does not convey a very elevated impression as to the mode of conducting business at her Majesty's Treasury.

RECENT PATENTS.

THE following are selected from the lists of recent patents published in the *Mechanics' Magazine*:—

Swinburne, R. W. Improvements in furnaces used in the manufacture of glass. Dated Nov. 17, 1855. (No. 2595.) The inventor makes outlets or openings in the sides or ends of a furnace, or in both the sides and the ends, near to or a little above the level of the siege or floor of the furnace upon which the cuvetts or pots are placed, for the purpose of causing the heat or heated air proceeding from the fires to be drawn across the siege in such a manner as to act upon the body, or upon the lower part of the cuvetts or pots, in a greater degree than in furnaces of the usual construction.

Barbier, C. J. An improved kiln for burning or firing pottery, bricks, tiles, and other earthenware. Dated Nov. 28, 1855. (No. 2683) This invention is grounded on the use of a moveable furnace, conveying successively the heat through all the parts of the materials to be burnt, and on the continuous action of the gases, which successively circulate through a number of laboratories, their temperatures decreasing as they get farther from the fire, thus completing the burning of such articles as are nearest, and at the same time progressively preparing the others.

Margueritte, L. J. F. Certain improvements in the manufacture of vitreous products. Dated Nov. 12, 1855. (No. 2537.) The improved vitreous compound contains some silica and alumen, but neither potash nor soda: this want constitutes the chief character of this invention. For instance, by calcining a mixture of silica 65·47, lime 25·80, alumen 8·73, a perfectly transparent glass is obtained.

Coignet, F. Certain improvements in the use and preparation of plastic materials or compositions to be used as artificial stone, or as concrete or cement for building and other purposes. Dated Nov. 26, 1855. (No. 2659.) These improvements relate to various combinations of sands, gravel, broken flint, broken stone, burnt or unburnt soil, cinders, and coal refuse, scoria, wood-ash, dross, with unctuous or hydraulic chalk, &c. and very fine sand, and in the employment of such matters when compounded in the formation of houses and other buildings. The matters to be mixed are pounded together, and when used, the desired forms are given by moulding and compression on the wall, or other formation, repeating the operation till the structure desired is obtained.

Clerville, J. J. C. de [not proceeded with]. Improvements in preparing oil with other matters for painting. (A communication.) Dated Nov. 26, 1855. (No. 2663.) Linseed oil is first boiled with peroxide of lead and sulphate of zinc; then a quantity of rosin and bee's-wax is dissolved therein; next a quantity of caustic alkaline solution is added—say about twice as much as there is oil—and the whole compound or mixture is boiled for a time, after which some essence of thyme is stirred in, and the whole is allowed to stand, and is afterwards filtered.

Cottsell, G. An improved gutter and kerb for roads and streets. Dated Nov. 7, 1855. (No. 2496.) Claim—Constructing a gutter and kerb of a hollow box or pipe, with a lateral grating, or series of apertures for the admission of the water and surface drainage, and for preventing the entrance of large solid substances.

Wilkes, J. G. Improvement or improvements in the manufacture of tubes of copper and alloys of copper. Dated Nov. 26, 1855. (No. 2657.) This invention consists in forming the said tubes by passing hollow cylinders between rolls furnished with grooves of a nearly semi-circular section, the grooves being somewhat less deep than they would be if their section were truly semi-circular.

Eassie, W. Improvements in hammers. Dated Nov. 16, 1855. (No. 2585.) This invention relates to a "friction hammer." The principle carried out is, the obtaining by means of nipping action the elevation and release of a vertical rod or bar of iron, the lower extremity, which is shaped as a hammer head, performing the functions of a hammer.

Jeffreys, E. An improvement in the construction of furnaces. Dated, Nov. 6, 1855 (No. 2495). Instead of setting all the fire-bars in the same horizontal plane, the patentee arranges them at different levels, rising from the central group to the sides, or from the sides to the central group. These fire-bars he mounts in a rocking frame, capable of being rocked by the stoker on the trunnions which support it, and thus of changing the level of the fuel.

Jessop, J. Improvements in the construction of furnaces and boilers. Dated Nov. 6, 1855 (No. 2488). This invention consists—1. In the employment of a number of discs or wheels, fixed at suitable distances from each other on a shaft, capable of rotating, and applied to the back part of furnaces betwixt the grate-bars and the bridge for receiving the clinkers, &c. when pushed from the grate-bars, and carrying the same forward at intervals to the ash-pit underneath. Also in the use of a diaphragm to separate the discs and ash-pit from the ordinary grate-bars and ash-pit, with doors, dampers, or valves, to regulate the admission of air thereto. 2. In constructing boilers with a water space projecting over the back part of the grate-bars, forming an inverted bridge to the furnace in front of the ordinary bridge, and immediately above the before-mentioned discs, the purpose of which is to deflect the smoke down into close contact with the fuel and clinkers at the back part of the furnace and on the discs.

Davis, W. Improvements in the construction and arrangement of furnaces and furnace-bars for the better combustion of smoke and prevention of loss of heat by radiation. Dated Nov. 7. 1855. (No. 2503.) This invention consists — 1. In constructing some of the bars of a furnace with deep flanges or projections in the direction of their length, on the upper part of the bar, carried as high as the top of the fuel, and so that when two such bars are placed together, an air channel or space is formed between them, for the passage of air to the upper part, or above the fuel in the furnace. The patentee also constructs furnace bars, with an upturned part at the back end, the whole forming a bridge at the throat of the furnace. 2. In placing a cellular construction on the interior of the furnace-door, and admitting continuously to such cells a sufficient quantity of air through the door, to maintain the interior of such cells as are next the door at a low temperature. The introduction of air at the fire-door is to prevent radiation of heat.

Pitman, J. T. Improvements in the construction of iron beams and girders, and in machinery for making the same. (A communication.) Dated Nov. 15, 1855. (No. 2574.)—The improved beam or girder is formed of a single bar of sheet or wrought iron brought to the required form by a series of consecutive swaging operations performed by certain im-

proved machinery. The side elevation of the beam is a parallelogram, and its cross section shows a pair of flanges at bottom from which rise the closed sides of the beam, surmounted by a tubular arch. The flanges rest at the ends of the beam upon the walls of the building, and form, throughout their length, abutments for the support of an arched fire-proof flooring and ceiling. The machine for making this beam or girder, consists of a series of pairs of rolls, or revolving swages and dies, arranged to act consecutively and automatically upon the iron. [Patent not proceeded with].

METROPOLITAN BUILDING ACT.

IN this badly and loosely drawn up Act, let me call the attention of the profession to some strange omissions,—very proper provisions existing in the former Act, 1844.

1. No person was allowed to break an opening in any external wall overlooking his neighbour's premises: if he did, a month's notice, and it was set right. At present there is actually no provision on this head.

2. Party-walls were most properly deemed to be walls dividing premises in different occupations, standing half on one ground, half on the other. At present a party-wall is only deemed to be so when it divides *buildings* in distinct occupations. Why, in the name of common sense, is not a wall, dividing a building and ground in distinct occupations, a party-wall? It is so, to all intents and purposes. A party-wall included a party-fence wall, *i.e.* a party-fence wall and a party-wall were one. This will be a fertile source of mischief. Party-fence walls are now ignored altogether.

3. Pray, why were all the scheduled forms of notices omitted? If a joke, it is a bad one. No part of the present, but what in some other part it contradicts itself. AN ARCHITECT IN A FIX.

BRIDGE BUILDING.

Permit me to say, in some corner of your journal, that the articles you have given on bridge foundations have led me to think whether it might not be possible even yet to construct foundations, where desired, literally imperishable.

Now I fancy that, within a coffer-dam, a pile of *unburnt* bricks might be raised, in proper order, with breeze, treated as a clamp, of the size and form for the required foundation, to a little above the high-water mark, and *then* burnt to a heat beyond that required for bricks, so that all might *unite together*, as we sometimes see a few accidentally joined in the firing. Then the air-channels might be grouted with fine concrete, to make the bed more solid, and prevent the sub-earth rising into them.

Or perhaps our giant engineers would as readily build and burn it on a floating iron platform, and then sink it gradually; in which case the town might be saved the nuisance of the firing, by its being done elsewhere, and floated afterwards to its place.

Now, if this be practicable, instead of placing dependence on rotting timber, or on decaying stone or rusting iron, it might be reposed in a fire-made rock that would defy both current and cannon as long as the existence of the people it serves.

Although apart from this point, may I name another thought? I do not suppose it new: that of forming a platform in the centre of the pier, suggested by the frequent perforating arch, for steamers' landing-place, connected by stairs with the road level of the bridge, so as to serve for either side of the water. OLIVER P.

Notices of Books.

Inventorium Sepulchrale: An Account of some Antiquities dug up at Gilton, Kingston, &c. in Kent, from 1757 *to* 1773, *by the Rev. Bryan Faussett.* Edited from the original manuscript in the possession of JOSEPH MAYER, Esq.; with Notes and Introduction. By CHARLES ROACH SMITH. Printed for subscribers only. London. 1856.

LAST year, as many of our readers know, the manuscripts and antiquities of which this is the history, passed into the hands of Mr. Joseph Mayer, of Liverpool, by purchase from Dr. Faussett's executors. Mr. Mayer lost no time in arranging and throwing open to the public his important acquisitions, and at once resolved on printing and illustrating the manuscripts for the public behoof. The conduct of the trustees of the British Museum in neglecting to secure the Faussett collection of Anglo-Saxon and Roman antiquities,—so suitable, nay, so indispensable as such British antiquities must be to a British museum,—was quite inexcusable, and has been the means of depriving the nation of other collections, such as that of Mr. Wylie; but it is fortunate for the country at large, that the Faussett collection did not share the fate of other antiquities rejected by the same trustees, and become lost to us either by transportation to a foreign country, or by dispersion in our own at public auctions: it is still more fortunate that this collection has passed into such hands as those of Mr. Mayer. Had the Government, moreover, been induced to accept the offer made by Dr. Faussett's executors, the manuscripts would probably have remained a sealed book to the public; whereas we have the whole here already, comprised in a handsome quarto volume, illustrated with numerous engravings, many of them in colours, and preceded by an Introduction, from the able and accomplished pen of Mr. Smith, who took so much interest in the unavailing endeavour to open the eyes of the Museum trustees to their manifest duty as the collectors and preservers—beyond all else—of our *national* antiquities.

On the Physical Conditions involved in the Construction of Artillery, with an Investigation of the Values of Materials and Causes of Destruction of Cannon in Service. By ROBERT MALLET, M.I.C.E. F.R.S. &c. London: Longman and Co. 1856.

Illustrated Handbook of Military Engineering and of the Implements of War, for Non-professional Readers. By R. FORREST, Woolwich. London: Day and Son, Lithographers to the Queen.

THE former and more important of these works, on the strength, form, and general construction of ordnance, and its improvement, is based on investigations first made public at the Royal Irish Academy in course of last year. Circumstances had led the author to the conviction that the manipulative skill of the gun-founder and the practical resources of the mechanical engineer were insufficient to supply any certain basis for advancement in the construction, power, and endurance of cannon, or to explain its mishaps and accidents; and that a *science* of gun-founding yet required to be formed and systematized,—a science which must be founded and established on a more searching and exact discussion of the properties of the constructive materials for ordnance than as yet appeared to have been given by any one. The work therefore necessarily contains much matter of interest to the civil engineer as well as to the military, on the strength and qualities, chemical and mechanical, of iron and brass, and on moulding, casting, and founding in general,—whether of cannon or of other heavy works in metal. The book is illustrated by various engravings, as of the peculiarities and changes of structure in iron, taken from photographs, as well as of other subjects more strictly professional. The smaller work under notice is expressly designed to render intelligible to non-professional readers the various necessarily technical expressions found in all historical or popular descriptions of modern warfare; and, although scarcely so timely in appearance as was probably anticipated when the plates and descriptions were first thought of, it is to be hoped the public will *not* lose their interest in such subjects, since it is hard to say how soon they may have a recurrence of occasion to desire a little special information as to the technical language of military engineering, war-implements, and warfare.

Miscellanea.

ELECTRO-TELEGRAPHIC.—We regret to learn that another submarine cable has been lost in the Mediterranean, between Sardinia and the African coast, during a storm. It was insured at Lloyd's for nearly 30,000*l*. Surely some better method of laying down submarine cables than appears to have as yet been adopted might be devised. In the event of a storm occurring could not the cable be cut and buoyed in some conspicuous way, so as to enable the vessel containing the remainder to recover the cut end and restore the connection at a future time? The cable just lost was between 120 and 130 miles in length, the distance between Spartivento and Tunis being 109 miles, and the Mediterranean irregular in depth.

GIBSON'S STATUE OF THE QUEEN.—The statue of her Majesty, which has been sculptured in marble by Mr. Gibson at Rome, has arrived in this country, and is now being placed on the pedestal allotted to it in the Prince's Chamber, in the New Palace of Westminster. This apartment is at the back of the throne. The pedestal on which the statue is being placed is of solid marble. The three emblematical figures on the base, representing Astronomy, Commerce, and Architecture, are also from the chisel of Mr. Gibson. Mr. Gibson has made up his mind to *colour* the group. It is much too large for its position.

INAUGURATION OF THE WELLINGTON STATUE AT MANCHESTER.—The Wellington statue (described in our last number) was inaugurated on Saturday last, in the presence of 20,000 spectators. The statue is a companion to the Peel statue, which has been raised higher on its pedestal, and both are placed in front of the Manchester Infirmary, which is erected on the finest site in Manchester. The mayor and corporation of Manchester, the Bishop of Manchester, Lieutenant-General Sir Harry Smith, the executive committee, the 7th regiment of Dragoons, and the 25th regiment, or Queen's Own Borderers, assisted at the ceremony. Mr. Noble had superintended the erection of the figures during the last fortnight, great care being required in fixing the bronze figures at the angles of the pedestal. These are of great weight: they were cast by Messrs. Robinson and Cottam, founders, Pimlico, and brought to Manchester without accident by the London and North-Western Railway. The statue of Mars at the left front angle of the pedestal is itself 10 feet high, while the main statue is only 13 feet high, and must, one would think, from its position on a pedestal 19 feet high, lose even some of the small predominance over its subordinate which it in reality possesses.

THE PEEL STATUE AT MANCHESTER.—The Peel Monument at Manchester has been elevated 3 feet 9 inches. Mr. William Buxton, builder, performed, by contract, the task of removing the statue, and re-erecting it, happily without accident. The work occupied about a week. An additional layer of granite has been placed underneath, of the height mentioned, and 13 feet 7 inches long, by 7 feet 2 inches wide. The granite was brought from Aberdeen, carefully tied up in matting like a bale of goods. To produce uniformity, the old granite, which had become somewhat weather-stained, will be "rubbed" or cleaned; but the black, smoke-covered figures will remain as they are in the mean time, although it is intended to clean them, so as to be in accordance with the Wellington statue, we presume. The statue of Sir Robert Peel weighs three tons; and the top stone of the pedestal upon which his figure rests weighs seven tons.

COMPULSORY HOUSE DRAINAGE: HAMMERSMITH.—The authorities of Kensington vestry summoned Mr. W. Hedges to Hammersmith Police-court on 28th ult. for suffering a house, No. 7, Brown's-buildings, Kensington, to be untenable. From the statements of Mr. F. Godrich, the medical officer of health, and Mr. Biradbridge, the surveyor, it appeared that a quantity of liquid house-manure flowed from a dung-heap in the yard into the basement of the house and under the flooring of the kitchen, and had rotted the boards. What the officers required was that a drain should be made under the kitchen to carry off the water, the yard to be properly drained, and that there should be a water-supply to the offices. Mr. Godrich added that the woman of the house had been, and was now looking, very ill, and he considered the house untenantable from the want of proper drainage. The defendant said he had let the house to a man named Lever, who had promised to make all things comfortable. The magistrate, Mr. Dayman, made an order as required by the complainant.

THAMES TUNNEL. — In the week ending 30th August, 16,436 passengers passed through, and paid 68*l*. 9s. 8d.

THE MARYLEBONE FREE LIBRARY. — It is a subject of regret, and, indeed, of dishonour and shame to the metropolis, that it has but one free library, and that even this is in so languishing a condition, that it must be closed at the end of the present year, unless the annual subscriptions be increased by about 200*l*. Since its opening (not under very wise auspices or arrangements, certainly), in January, 1854, no less than 73,312 readers have attended it, and 79,477 books have been issued, down to 31st July last. It also contains a lending library of 1,000 volumes, established and conducted by working men, and in full operation, 5,732 volumes having been issued and returned without loss or damage. A special committee of gentlemen, unconnected with the library, but interested in its welfare, has been formed for the purpose of preventing, if possible, its threatened extinction, and it is to be hoped the metropolis will not incur the additional disgrace of not being able (or willing rather), to sustain the only solitary institution of this kind which it possesses.

GAS.—The Liverpool United Gas Company have just been dividing their usual handsome dividend of 10 per cent. per annum for the last half-year. The gas rental for 1856, notwithstanding the reduction of price from 4s. 6d. to 4s. in 1855, has already reached the amount of same rental in the year previous to the reduction, namely, 1854, and even exceeded it. The chairman declared that he was perfectly satisfied with the result, and that "in this as in every class of business in which men engage, those who supply good and cheap articles need never be afraid of an increase of production." We have not the least doubt of the rental being farther increased in the ensuing year.——The directors of the gas company at a place called Errol, in Scotland, not being yet converts like the Liverpool chairman to the right principle in gas statistics, lately attempted to increase their dividend of 6½ per cent. arising from the sale of gas at 10s. a thousand cubic feet, by *raising* the price to a still higher pitch, namely, 10s. 10d. The immediate result has been, that more than the one-half of the gas-consumers of the village have signed a document, binding themselves to give up the use of gas altogether till the company agree to reduce the price and to pay for replacing the meters.——The ratepayers of Salford have, in a public meeting, formally complained that the price of their gas has been raised 10, 20, and 30 per cent. without any increase of its illuminative power, and they seem to think they may as well have it cheap and bad as dear and bad. Mr. Rudd stated that the price per thousand feet in London was only 3s. 6d. although coals were so dear; that in Burnley the price was the same, and in Todmorden 3s. 8d. He complained that the Salford gas was impure, and that it was delivered at too high a pressure. They were paying 10 or 15 per cent. for gas which they did not consume. Mr. Storey said that the profits from the gas at the present time, if properly managed, would be from 120 to 150 per cent.——At a recent meeting of the directors of the Spilsby Gas Company, it was resolved to reduce the price of gas from 8s. 4d. to 7s. 6d. The company is now paying a dividend of 5 per cent. which will doubtless, as usual, increase as they diminish the price of their gas.——The York United Gas-light Company have resolved to divide 6 per cent.

EMPLOYMENT OF CONVICTS. — In an article of your paper of last week, there was a hint on the subject of the Thames sewage, which pointed to employment of thieves in said dirty work. This was hitting the right nail on the head. I have given this same nail a blow or two myself, but it will take many more to drive it home, but when done, it will be a *clencher*. Some time since I addressed the *Times* on the subject in general, proposing that street thieves should be put to all the irksome and dirty work of the town. My letter was not inserted, but the hint was thought to be worthy of an honourable position in a leader. Dear sir, do contrive to give another blow on this nail. It may be rather out of your line, but it can be done. Thieves do not bargain for continuous hard work: put them in earnest to this, and the reformatory system will find much of their work done by this simple process.—H. B.

STAINED-GLASS WINDOWS FOR GLASGOW CATHEDRAL.—At the request of the Lord Provost of Glasgow, Mr. James Ballantine, of Edinburgh, the artist, who was selected, in 1845, to fill the windows of the House of Lords, has submitted a complete plan of illustrations for the windows in Glasgow Cathedral, comprising the leading events recorded in the Old and New Testament. He has prepared the designs for the four principal windows: these are as follow:—*Large West Window.* — Christ's Entry into Jerusalem—Last Supper—Crucifixion and Ascension, or the Life of Christ, illustrated in a series of medallions. *Large South Transept Window.* — The Transfiguration, and Christ cleansing the Temple: the four lateral upright lights to be filled with Architectural Ornamentation, similar in character to the treatment of the large north transept window. *Large North Transept Window.*—St. John preaching in the Wilderness—Christ preaching on the Mount—The Day of Pentecost—The Angels opening the Prison Doors to the Apostles. *Large East Window.* — Effigies of the Twelve Apostles and Heads of Twelve Prophets, in Medallions, with geometric and foliated adjuncts. Mr. Ballantine urges that unity of purpose and harmony of connection can only be attained by placing the whole series for execution in the hands of one artist.

COLOSSAL BUST OF THE QUEEN FOR MANCHESTER TOWN-HALL.—The bust commissioned by Alderman Barnes, from Mr. Noble, and for which her Majesty granted sittings, is now completed, and will be shortly placed in Manchester Town-hall.

A NEW METALLIC ALLOY.—Equal parts of iron, cobalt, and nickel, fused together, made a very hard alloy of dazzling whiteness, resembling silver. It is suitable for making knife-blades, fine files, and other such articles.

NORTH OXFORDSHIRE ARCHÆOLOGICAL SOCIETY. —The members of this society had their annual excursion on Thursday and Friday in week before last, in conjunction with the members of the Worcester Diocesan Architectural Society. The North Oxon members halted for a short time at Swalcliffe, and after inspecting the church, proceeded to Brailes, where they were joined by the members of the Worcester Society. After a visit to the church, the whole party started for Compton Wyniates, the residence of the Marquis of Northampton. They were here cordially received by Lord A. Compton, who conducted them over the mansion, and showed them the various objects of interest with which it abounds, adding various explanations. The church was next visited, and the party then went on to Tysoo Church, and from thence to the Sun Rising, at Edge Hill, where they were met by Colonel North. Here the party dined. Warmington was the next halting-place: the church here was visited, and one of the Worcester gentlemen gave a short account of a curious portion of the edifice, supposed to have been used by a recluse. After visiting Shottswell, the party returned to Banbury. A meeting was held in the Vicarage-hall in the evening. The Rev. T. Chamberlain, vicar of St. Thomas's, Oxford, read a paper "On the Restoration of Chancels and Churches." This was followed by one from the Hon. F. Lygon, "On Mediæval Monuments—especially brasses," rubbings of which were hung round the hall. Mr. Faulkner, of Deddington, made a few remarks on the necessity of preserving the brasses in churches. Friday's excursion included Adderbury, Deddington, Somerton, Weston-on-the-Green, Middleton Stoney, Wendlebury, Alchester, and Bicester.

WOOLWICH: GOVERNMENT CONTRACT.—Messrs. Lucas, brothers, of Lowestoft, builders, have concluded a contract with Government for the erection of a brick wall, 15½ feet in height, and 2 miles in extent, which is to inclose and connect the newly-acquired premises in Woolwich Marsh with the Arsenal. Great additions and improvements have been made throughout the entire circuit, so that the general aspect of the Arsenal is now that of a thoroughly new establishment, on a liberal and extensive scale. The works are being pushed forward with great diligence, many of the contractors' men working over-hours.

THE LATE SIR RICHARD WESTMACOTT, R.A.—Sir Richard died at his town residence, in South Audley-street, on the 1st inst. in his 82nd year, after an illness of about three weeks' duration. Richard Westmacott was born in London, in 1775, and, showing early signs of his future vocation, adopted the profession of a sculptor when he was quite a child. In 1805 the Royal Academy of London elected him an associate of their body, and he became in 1816 a Royal Academician. The works of art by which he was best known are his statues of Addison, Pitt, and Erskine, his statues of the late Duke of Bedford and of Charles James Fox, in Bedford and Russell squares, and his monuments to Sir Ralph Abercromby, Lord Collingwood, and others, in Westminster Abbey and St. Paul's Cathedral, together with the figure of Psyche, much admired by every lover of art. Besides these he designed the colossal statue of Achilles, in Hyde-park. "The Distressed Mother," which he executed in 1822, for the Marquis of Lansdowne; "The Houseless Traveller," a copy of which is in Westminster Abbey; his "Euphrosyne," for the late Duke of Newcastle, in 1837. His latest work, we believe, was the sculptured pediment at the British Museum.

THE STEREOSCOPE.—A discovery of a curious character is announced by a M. Luegol, namely, an animated likeness, which takes us a step farther in photography, and surpasses even a "speaking likeness." M. Luegol takes two portraits for the stereoscope, each one at a different angle to the other, so that when they are placed in the instrument and it is moved from the right to the left, the eyes are in apparent motion.

MESSRS. BROADWOOD'S FIRE — WORKMEN'S TOOLS.—The *Builder*, in noticing this calamitous event, observes,—"Several hundred workmen will be thrown out of employment, and a great number have lost their tools, some of which were insured, and many not. It is much to be regretted that workmen will not adopt this easy mode of securing the value of their property. There is no difficulty whatever in doing so. It is a practice we have often urged, and we hope that experience, such as the present, will at length induce the general observance of tool insurance as a rule with but few exceptions." Why do not masters make it an invariable rule to include in their insurance the tools of their workmen, and if they think it necessary to make a deduction from the wages on that account, a penny or twopence a week, according to the value of the chest and the risk of the occupation, would defray the whole cost?—*Bury Post*.

PAPER FROM STONE.—We are likely shortly, it seems, to be writing "with a pen of iron on the rock," in a sense very different from what Job or his comforters dreamt of, or the Assyrians, with their mieroscopic writings on tablets of pottery, practised. A Glasgow marble-cutter, grudging doubtless the immense waste of his material in useless chippings, is said to have invented and patented a process whereby stone is convertible into paper of a superior kind, both in texture and quality, to that now in use, and at a much cheaper rate. As stone, however, is only said to be "the principal material," we must infer that the *stone* needs *mortar* to hold it together: nevertheless, the saturation of some glutinous medium with stone dust *may* form a very fair succedaneum or substitute for paper. Mr. Edward Greenless is the patentee.

FATAL ACCIDENT BY FALL OF OLD BUILDING.—On Tuesday night, about twelve o'clock, a house, No. 9, Little Swan-alley, Moorgate-street, fell, occasioning the loss of four lives, and severe injury to others. The whole of the occupants, sixteen in number, were buried in the ruins, so that it is wonderful more were not sacrificed. Some difficulty in shutting and opening doors had previously, it is reported, given warning of what might have been hence looked for, but the landlord, it seems, denies that any information of the circumstance had been given to him. The house was a very old one, of three stories, let out in rooms. Fortunately three rooms only were occupied. Decay of the beams and rafters is regarded as the cause of the accident. The alley contains a number of other houses of a like dangerous order, and is surrounded, indeed, by the same kind of buildings, all densely occupied.

THE SLEDGE PRINCIPLE IN RAILWAY TRANSIT.—A correspondent, who subscribes himself "A Thoughtful Mechanic," suggests the substitution of the sledge principle in railway carriages in place of wheels, leaving the latter on the locomotive only, and describes the advantages of such a system, as in safety, facility of stoppage, &c.; but we fear it is but too manifest that the disadvantages arising from that friction to which some of these counter-advantages are due are too many to leave much chance of the substitution which our correspondent desires, however much the safety or smoothness and comfort of railway travelling would thereby be increased.

THE METROPOLITAN TRAFFIC QUESTION: SCHEME FOR RAILWAY INTERSECTIONS.—The absurdity involved in the idea that the metropolis of a country which set the example of railway transit to other nations, is still so utterly devoid of internal means of intercommunication at all equivalent to the immensity of railway traffic poured into its streets, that these may be said to be now in a perpetual state of blockade, and continually getting worse and worse,—is so very obvious, that the subject is ever and anon forcing itself into reiterated notice, as indeed it ought to do, and must do, till the intolerable and still increasing grievance shall be fairly met and obviated: and the sooner the better, considering not only the really alarming increase of the general traffic in the streets of the metropolis, but the rapid extension of these streets themselves, presenting thus an ever increasing obstacle to the carrying out of any feasible scheme of railway interconnection, except at a wide sweep around its suburban districts, which would still further postpone the requisite internal interweavement of routes. A Tract, by Mr. William Footman, titled "A Practical Means of providing an efficient Accommodation for the Traffic of the Metropolis," has just been published by Herbert, 88, Cheapside, in which a railway scheme is proposed to be carried out by a company, at a cost of 3,600,000*l.* including the purchase of Southwark-bridge, for the purpose of the projected railway, which is to run as an extension, from the South-Western and South-Eastern, to that bridge, so as to form a junction with a Blackwall extension, and to pass over Thames-street and Cannon-street, and by a tunnel under Cheapside and St. Martin's-le-Grand, &c. to Smithfield, and then, by open railway again, to the Great Northern, at King's-cross; passing thence on by the outskirts of the Regent's-park, and forming a junction with the North-Western by the way, to the Great Western at Paddington. The total length of the proposed company's line would be about 6½ miles, and it is noted that short lines in populous districts are the best paying lines; and certainly no such populous districts as these are to be found so concentrated throughout the whole world. Without *some* system of central interlinkment (if we may be allowed the expression), our railway system is like a body without a head,—like some of those acephalic foetal monsters which occasionally astonish the world. The organization of the railway system of England cannot be regarded as a vital self-sufficient organism till a *centrum commune* or central head be formed in the metropolis; and we hope to see this done ere many years go over our own head.

THE BANK OF LONDON, LATE HALL OF COMMERCE.—Mr. McLean has lately published a good view of the beautiful chamber, in Threadneedle-street, formerly known as the Hall of Commerce, and now occupied by the Bank of London. It was judiciously fitted up for this purpose by Mr. Edmund Woodthorpe.

LORD SOUTHESK AND AGRICULTURAL DWELLINGS.—We learn with much satisfaction that the Earl of Southesk has given instructions to the tenants on his estates to make returns of all the houses and cottages occupied by servants and others employed in agricultural labour, specifying the dimensions of the different departments, and other particulars, with the view of introducing a thorough reform in the dwellings of the humbler classes in this quarter (Brechin). We also learn that his lordship is about to erect a comfortable dwelling-house and place of meeting for Mr. Wodsworth, home missionary, whose labours among the out field population of this town have been attended with marked success during the few months that have elapsed since he became a denizen of the ancient city.

PRESERVING WOOD, METALS, &c.—Mons. C. F. L. Oudry, of Paris, has patented the application of copper or other metals on iron, zinc, and other metals and their alloys, and also upon wood, paper, cardboard, and stone, having first covered them with an isolated coating of a composition susceptible also of preserving, waterproofing, and metallizing them, and which coating is a conductor of electricity. The copper is applied to any desired thickness by ordinary electro-chemical means, and serves to preserve the metal or other substances thus covered from oxidation by the action of the air, water, or the humidity of the earth. The composition may be made of metal or metallic salts, combined with essential oils or greases, and resins, gums, bitumen, or asphalte, according to the nature of the articles to be covered over, and a conducting property is given by adding copper, graphite, or other metallic powder.

THE SEWAGE OF GREAT TOWNS.—Mr. R. G. Whitfield writes to the *Times*:—"About eight years ago the city of Antwerp paid annually for sweeping their streets 20,000*f*. The scavenger not being satisfied, and having made an increased demand, the members of the corporation came to the determination to put the cleansing of the streets up to competition. The first year they obtained 15,000*f*. which, as the sewers, formerly all communicating with the Scheldt, have been removed and cesspools made, has gradually increased up to the present time, when the corporation receives 120,000*f*. the contractor paying that sum for the privilege of obtaining the sweepings of the streets and the contents of the cesspools! The streets of Antwerp are now swept every morning throughout the year before ten o'clock. The dust and refuse from the houses are not allowed to be thrown into them (as is done in Paris) until the scavengers' bell rings, and the cesspools containing the excrement are periodically emptied, by order of the municipality, the soil being first deodorised, and the whole, with the dust and sweepings, are carted away some miles into the country, and converted into guano, a very thin layer of earth on the deodorised soil being sufficient to keep down any noxious exhalations. The fertilising qualities of the street-sweepings and the night-soil, when converted into guano, are truly surprising, both at Antwerp and Paris, and are, commercially, a very lucrative speculation. In Paris, last year, I watched the growth of grass-seed sown upon earth prepared with the 'town guano,' for a lawn at the Duchess D'Alba's: on the eighth day it was mown! At Milan, where the system has been extensively adopted, and the town-produce for years has been converted to its legitimate use, the land yields eight crops of grass a year!"

TENDERS

For alterations and improvements at St. James's church, Piccadilly. Mr. Charles Lee, architect:—

Burt	£1,835 0 0
Lawrence	1,825 0 0
Abbott and Son	1,760 0 0
Patrick	1,748 0 0

For the restoration and enlargement of the parish church of St. Mary, Brecon. Messrs. W. G. and E. Habershon, Architects. The quantities were furnished:—

	For Church.	For Screen.
D. Thomas (Cardiff)	£3,400	
H. Ramm (Abergavenny)	2,736	£40
Walter Jones (Brecon)	2,450	45
T. Griffiths and Son (Brecon)	2,420	43
Wm. Williams, jun. (Brecon)	2,400	47
W. Jones and J. Games (Brecon)	2,097	25
Henry Jones (Brecon)	2,065	30
Rees Price (Brecon) (accepted)	1,707	21

N.B.—The last named builder made a mistake in his tender, in not having included the whole of the works, viz. the plumber's, stainer's, and glazier's work, which he estimated at 205*l*. which amount the committee allowed to be added to his estimate, making it 1,912*l*. (accepted).

For new church at Richmond, Surrey. Mr. G. G. Scott, architect. Quantities supplied by Messrs. Balam and Lee:—

Hills	£9,291 0 0
Nicholson	9,227 0 0
Sweet	8,948 0 0
Carter	8,930 0 0
Brewer	8,840 0 0
Carless	8,767 0 0
Piper	8,445 0 0
Long	7,599 0 0

For the erection of a villa at Ewell, for Mr. W. R. Shaw, Messrs. Tillott and Chamberlain, architects. The quantities not supplied:—

Wm. Wills	£1,747 0 0
Heath and Son	1,745 0 0
J. Gray	1,695 0 0
B. Wells	1,598 0 0
S. and J. Chuter (accepted)	1,550 0 0

For rebuilding the new Philological School, New-road, under Messrs. W. G. and E. Habershon:—

Messrs. King and Stanger	£4,620 0 0
M. A. Taylor	4,390 0 0
G. Day and Co.	4,295 0 0
J. H. Tarrant	4,194 0 0
W. T. Purkiss	4,175 0 0
Patman and Fothington	4,156 0 0
Longmire and Burge	3,983 0 0
J. H. Bottenby	3,898 0 0
H. Knapp	3,810 0 0
P. J. Harmer	3,800 0 0
W. H. Rowe	3,695 0 0
Thompson and Crosswell	3,693 0 0
A. Simmons	2,660 0 0

For Northampton Lunatic Asylum. Messrs. Milne and Son, architects:—

	Estimates for new wing.	Drainage, liquid manure tanks, &c.
Cosford	£6,500	498
Watkin	6,500	
Whitney	6,240	
Wills and Fisher	6,190	
Ireson, sen. (accepted)	6,185	£495 (accepted)
Ireson, jun.	6,040	
Gardener	6,025	

For West Kent Militia barracks. Messrs. Whichcord and Son, architects:—

	Bricklayer, Mason, and Carpenter.	Plumber, Glazier, and Painter.	Smith and Founder.
	£. s. d.	£. s. d.	£. s. d.
Kirk Parry & Co.	4,749 0 0	649 10 0	598 10 0
Drury & Biggleston			570 0 0
William Cobb	4,896 0 0		
Thompson & Godwin	4,700 0 0		
George Chambers	4,970 17 7	498 0 0	
James Hyles		573 0 0	
William Colling			751 9 6
Robert Foord		594 14 6	
Thomas Court		476 18 0	
Weeks & Petman			631 9 6
Sutton & Walter	5,187 0 0	501 3 0	
L. Ashdown		539 0 0	
Garrett & Cross			648 0 0

The tenders of Messrs. Drury and Biggleston; Thompson and Godwin; and Thomas Court, were accepted. Total, 5,746*l*. 18s.

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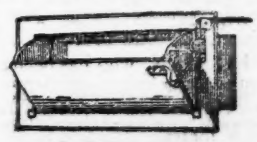

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BUILDING LAND, WOODFORD, within five minutes' walk of the Church and George-lane Railway Station, and eight miles from the City, TO BE LET on Building Leases, desirable BUILDING LAND, admirably adapted for Villas or other Residences, being part of the Grove Estate, Woodford.—Apply to Mr. WASHINGTON SINGLE, the Grove, Woodford; or to Mr. G. R. NOBLE, Surveyor, &c. Woodford, Essex.
Money advanced if required.

FREEHOLD BUILDING LAND between Aldershott permanent Barracks and Farnham, adjoining the Government Land, half a mile from the Queen's Pavilion, and having two frontages with most extensive views. Sand, gravel, and building stone upon the estate. Eleven acres, together or in portions.—Apply to Mr. W. C. BIRCH, Architect and Surveyor, Farnham, and 16, Essex-street, Strand

BUILDING LAND TO BE LET, at
HALLSVILLE.....Term 1,000 years, for small cottages.
CANNING TOWN .. 1,000 .. for small cottages.
NORWOOD..... .. 1,000 .. for villa residences.
STRATFORD..... .. 100 .. for small cottages.
POPLAR..... .. 98 .. for fourth-rate houses.
Advances 70l. to 90l. at 5 per cent. on each cottage.
Apply to Mr. Wm. ELLISON, Architect, Stainsby-road, Limehouse.

DUNSTABLE, BEDS.—TO BE LET, ELIGIBLE BUSINESS PREMISES, with ample Domestic Apartments attached, situate in the High-street, Dunstable, having a frontage of 40 feet, by a depth of 124 feet. The warehouses and offices (which have been erected within the last few years) are commodious, and comprise every requisite for the Straw Business, for which they are specially adapted.—Apply to Mr. WILLIAM C. REED, Architect and Surveyor, 84, Old Broad-street, London.

BUILDING LAND, KENNINGTON.—NINE ACRES of very valuable LAND, lying at the back of Lower Kennington-lane, in the Parish of St. Mary, Lambeth, TO BE LET for building purposes.—Apply to Messrs. WILLIAMS and JAMES, 62, Lincoln's-inn-fields.

PERPETUAL INVESTMENT, LAND, and BUILDING SOCIETY—Shares issued, 13,639. Invested on real Securities, 162,000l. Moneys daily received on Deposit or Shares, interest paid half yearly. Money ready for advances on houses or lands. No legal charges to Borrowers.—Apply for particulars to the Secretary, Mr. J. E. TRESIDDER, at the Head Offices, 37, New Bridge-street, London.

BUILDING LAND.—TO BE LET on Lease, for a long term, a desirable PLOT of LAND, in an elevated situation, admirably adapted for the erection of Villa Residences.—For further particulars apply by letter to W. C Messrs. Webster's, 60, Piccadilly.

FREEHOLD and LAND-TAX REDEEMED.—TO BE SOLD, about FIVE ACRES and a HALF of extremely valuable BUILDING LAND, situate within a few minutes' walk of the Egham station of the Ascot Railway, with extensive frontages to the High Western and Windsor roads, commanding uninterrupted views of the Surrey Hills, Epsom Downs, St. Ann's Hill, &c. and within an easy walk of Virginia Water, the Great Park, the River Thames, and a pleasant drive of Ascot Heath, Windsor Castle, Hampton Court, and other attractive localities. Villa residences are in great demand in this favoured locality, being surrounded by the seats of the nobility and gentry, and from the contiguity to the royal domain, must always maintain its rank as a first-class neighbourhood. The soil is gravel and sand, and a good supply of water can be obtained.—For particulars, and to see plans, apply to Messrs. WEHNERT and ASHDOWN, Architects, 42, Charing-cross.

A CAPITAL MANSION, in one of the new parks in the vicinity of Sydenham, Norwood, and Streatham, TO BE LET, on lease, or TO BE SOLD, at a ground-rent. The house stands on a gravelly soil, and contains on the upper floor seven airy sleeping-rooms; on the first floor, four excellent bed-chambers, a dressing-room, and a bath-room. Water laid on to the top of the house. On the principal story a spacious and lofty drawing-room, a well-proportioned dining-room and study. On the basement a good kitchen, housekeeper's room, butler's pantry, strong-room, and every convenience. Gas laid on throughout the house. Double coach-house and three-stalled stable, with rooms and loft over. Fore court, carriage drive, and large back garden.—Plans, with full particulars, may be seen, and tickets to view, had at Messrs. ROBINSON and ROBSON'S, 28, Margaret-street, Cavendish-square.

TO BUILDERS, ARTISTS, and OTHERS.—TO BE LET, or the FREEHOLD TO BE SOLD, a FAMILY RESIDENCE, situate in Park-place, about ten minutes' walk of the Highbury Railway-station, containing four good bed-rooms, dressing-rooms, dining-room, spacious drawing-room, breakfast-room, kitchen, and every accommodation for a respectable family, large garden in the rear, extending to College-street.—For particulars and orders to view, apply to Messrs. PRICKETT and SONS, Surveyors and Valuers, 34, Southampton-buildings, Chancery-lane; and Highgate, Middlesex.

BILLINGSGATE.—TO BE SOLD, or LET on Lease, THREE FREEHOLD HOUSES.—Two in Love-lane, One on St. Mary-at-Hill, Lower Thames-street. The Three adjoin each other, with a large cellarage, vaulted, and are suitable for many purposes requiring room.—Inquire on the Premises; of Mr. FALKNER, Architect, 61, Gracechurch-street; or of Mr. ELLIS, 41, Botolph-lane.

FINSBURY-SQUARE.—The LEASE of a most desirable and commodious FAMILY RESIDENCE, in the best part of Finsbury-square, TO BE DISPOSED OF. The house is replete with every convenience, and has been decorated in a superior manner. Communicating from the lower part of the garden, and having a separate entrance from an adjoining thoroughfare, there is a Suite of Offices, consisting of Eight Rooms and Cellar, with paved yard, water-closet, &c.—Applications for cards to view and for particulars to be made to Mr. WILLIAM SOUTTER, Surveyor, 25, Broad-street Building.

TO BE LET, in LIMEHOUSE, extensive WATERSIDE PREMISES, with Lanting Crane, &c. in good repair.—Apply to E. ROBINSON, 9, Church-row, Limehouse.

TO BE LET, the commodious BUSINESS PREMISES, being No. 17, Green-street, Leicester-square.—Apply to W. C. REED, Architect, 64, Old Broad-street, City.

TO BE SOLD, a Bargain, SIX CARCASES, for finishing, held on a long lease at a ground-rent.—Apply to Mr. ROBERT GRAY, Estate Agent and Surveyor 14, Southampton-street, Strand.

BUILDERS' and CONTRACTORS' PREMISES.—The LEASE TO BE SOLD of spacious yard, with workshop, sheds, and residence, situate in the vicinity of Islington, occupying an area of nearly half an acre, held for a long term at a low ground-rent.—Apply to Mr. St. QUINTIN, Auctioneer, 30, Royal Exchange.

WATER-SIDE PREMISES. — TO BE LET, or the LEASE TO BE SOLD, a WHARF, on the Regent's-canal, near the Victoria-park, having a frontage of about 140 feet, with large shed, carcase of dwelling-house, and range of stabling.—Apply to Mr. ST. QUINTIN, Auctioneer and Surveyor, 30, Royal Exchange.

WINDOW-BLINDS.—J. FULLER, Manufacturer, 29, Charlotte-street, Blackfriars-road. Established, 1830.—Venetian Blinds, from 10s. each, or 8d. per foot; Wire ditto, 7s. each, or 1s. 9d. per foot; Holland ditto, from 2s. each, or 5d. per foot. Every other description of Blinds equally low, warranted of the best manufacture. Discount to Builders and the Trade. Fixed complete.

WINDOW BLINDS.—TYLOR & PACE, Window Blind Manufacturers, 104, New Bond-street, and 3, Queen-street, Cheapside, London, submit the following PRICES of WINDOW BLINDS, which they can recommend as being made in the best manner:—Venetian blinds, per square foot, 9d.; best holland blinds, on rollers, 6d.; best ditto, on spring rollers, 9d.; gauze wire blinds, in mahogany frames, 2s.; perforated zinc blinds, in ditto, 1s. 10d.; outside blinds of striped cloth, 2s. Transparent blinds in great variety. Engravings, with prices and discounts to builders and the trade, forwarded on application post free.

THE PORTLAND CEMENT WORKS, NORTHFLEET, KENT.—Messrs. ROBINS and CO. to WHOM THE PRIZE MEDAL WAS AWARDED in 1851, are prepared to supply any quantity of the very best PORTLAND CEMENT, manufactured by them for all the purposes to which Cement is applicable. Orders received at Great Scotland-yard and at the Works.

PORTLAND CEMENT WORKS, NORTHFLEET, Kent.—KNIGHT, BEVAN, and STURGE, Manufacturers only of first-class quality, for the home and foreign trade. Portland Cement is manufactured at these works with especial reference to its destination, whether for stuccoing, brickwork, blocks for breakwaters, tidal work, or otherwise.—London Wharf, Belvedere-road, Lambeth.

PORTLAND and ROMAN CEMENTS.—T. H. BOORMAN, WILD, and CO. MEDWAY LIME and CEMENT WORKS, LOWER HALLING, near Rochester. Agent at the Works—Mr. THOMAS WEEKES.
Agents in London, Messrs. GEORGE POTTER and CO. Lime-merchants, Purfleet-wharf, Earl-street, Blackfriars, and No. 19, North-wharf-road, Paddington.

PORTLAND and BATH CEMENTS.
TATHAM and CO.
14, South Wharf, Paddington.

PORTLAND and BATH CEMENT.—FULLWOOD THOMPSON and CO. request the attention of Merchants and Contractors to the quality of their Portland and Bath Cement, which they manufacture on an improved system, securing regularity of strength and colour, and at a less cost than is attainable by most other makers.
These cements set under water in a few minutes, and are not affected by extreme heat or cold.
FULLWOOD THOMPSON & CO. will be happy to send prices and samples in reply to application by post. They deliver free into the Bristol and Exeter Railway Company's trucks at their works, or free on board in the Port of Bridgewater.

GEO. & THOS. EARLE, CEMENT MANUFACTURERS, HULL.—Light, Dark, and Portland Cements equal to any made. Manufacturers also, and Dealers in Plaster, Paris White, Mastic, Hair, Lias Lime, Laths, Slates, and Slate Slabs, Fire-bricks, Grindstones, Cement Chimney-tops, ditto Vases, Ridging, &c. Paints, Stucco, &c. Marble Merchants and Importers of Pozzolano.

11, George-yard, Lombard-street, City.

ELMLEY CEMENT WORKS.—ROMAN and PORTLAND CEMENT of the first quality, manufactured on the above works. Also STOCK and KILN-BURNT BRICKS, hand moulded and machine made, for shipment or otherwise.—Apply to G. BOOTH, Agent, as above.

KEENE'S and PARIAN CEMENTS and FRENCH PLASTER, for internal uses. These well-known hard Stuccoes dry quickly, and can be painted upon within a few days.—Made and sold by JOHN BAZLEY WHITE and BROTHERS, Millbank-street, Westminster.

ATKINSON'S CEMENT, so long known and esteemed in London for plastering purposes, is a quick-setting Cement, that requires no colouring.—Sold exclusively by JOHN BAZLEY WHITE and BROTHERS, Millbank-street, Westminster; and Seel-street, Liverpool.

ARTIFICIAL HYDRAULIC or PORTLAND CEMENT combines the valuable qualities of the natural Cements with the additional advantage that it greatly excels them in its cementitious properties; that it is not affected by frost, and does not vegetate in damp situations. Account of COMPARATIVE EXPERIMENTS on the strength of this and other Cements (read at the Institute of Civil Engineers), to be obtained from the Makers, JOHN BAZLEY WHITE, and BROTHERS, Millbank-street, Westminster, who prepare one quality only of Portland Cement.

BATH, PORTLAND, and ROMAN CEMENTS.—The London and West of England Cement Company can offer to the Trade the best natural HYDRAULIC CEMENTS at reduced prices. The Company particularly recommend the best quality of their Bath Cement for all modelling cornices, decorations, &c. as having all the qualities requisite for an interior cement, and being quite unaffected by extremes of weather. The Company also supply BLUE LIAS LIME, lump and ground, which will carry more sand than any in the market.—Communications to be addressed to the General Offices, 80, Old Broad-street, London; to Mr. MONUMENT, 4, Caroline-place, City-road; to Mr. TIMEWELL, the Depôt, 9, North Wharf-road, Paddington; or to the Works, Dunball, Bridgewater.

SOUTHAM BLUE LIAS LIME DEPOT.
Glazed Stoneware Sewage Pipes.
Brick, Lime, and Cement Merchants,
TATHAM and CO.
14, South Wharf, Paddington.

PARIAN CEMENT, reduced in price 25 per cent. This article is valuable for inside stucco, and especially for skirtings, for flooring on brick arches, &c. It takes paint in a few hours after its application on walls or laths, is without efflorescence, and may be papered in a couple of days. A finer quality forms a beautiful Scagliola, with any admixture of colours.—Manufactured by FRANCIS, BROTHERS, Cement Works, Nine-elms, London.

CEMENT.—ROMAN and PORTLAND CEMENTS, and PLASTER of PARIS, manufactured by C. J. HILTON, can be had in any quantity, wholesale and retail, at his wharf, 6, Upper Thames-street, London; and also at the manufactory, Faversham, Kent.—N.B. These Cements supplied for shipment, on advantageous terms.

JOHNS and CO.'s PATENT PERMANENT STUCCO WASH (perfectly non-absorbent), STUCCO, CEMENT, STUCCO PAINT.—CLARK and BENGOUGH, Manufacturers, Grand Surrey Canal Bridge, Old Kent-road. Office, 4, George-yard, Lombard-street.

PORTLAND CEMENT.—JAMES WESTON having enlarged that portion of his CEMENT WORKS on Millwall, Poplar, for Manufacturing the above CEMENT, begs to inform the Trade in general that they can be supplied with any quantity they may require, either at his Works, St. Andrew's Wharf, Earl-street, Blackfriars, or Middle Wharf, Scotland-yard, Westminster, Manufacturer of Roman, Lias, and Mastic Cements, English and French Plaster, &c.

PORTLAND and ROMAN CEMENT.
PLASTER of PARIS
Manufactured by J. M. BLASHFIELD, at Millwall, Isle of Dogs.
Warehouse, No. 1, Wharf, Paddington-basin.

BLUE LIAS LIME.—CHAS. NELSON begs to offer to consumers a supply of Blue Lias Lime direct from his Quarries in Warwickshire, the quality of which has been tested by several of the largest building firms in the metropolis and approved by them; and those who have favoured C. N. with their patronage during the last three years have always expressed themselves satisfied with his system of weighing or measuring the lime. When the lime is delivered by boat, the master has instructions to produce (on demand) the canal gauger's pass, by which the purchaser may know the exact weight delivered.—Orders addressed to the London Depôt, 16, South Wharf, Paddington, J. D. BLYTH, Sole Agent, will have immediate attention.—Quarries and Manufactories, Stockton, near Southham, Warwickshire.

DAMP WALLS.

STENT'S COMPOSITION FOR PREPARING NEWLY-PLASTERED OR DAMP WALLS FOR PAPERING,

Is the result of practical experiments and long experience; it is unfailing in its application. Entire houses have been papered a few days after plastering. In repairs of old plastering it is invaluable. A moderate room can be papered for 2s. 6d.
Prepared only by W. J. STENT, Warminster.
London Agents: Messrs. GEO. and THOS. WALLIS, 64, Long-acre. Agent for Ireland: Mr. S. BOYD, 46, Mary-street, Dublin.

HUBBUCK'S WHITE BODY PAINT of superior body to the Best White Lead, whilst it is as smooth and permanent as Zinc Paint. One coat laid on as directed is equal to two coats of White Lead in consumption of material is less than for one coat. It dries very fast and hard.
HUBBUCK'S STONE COLOUR BODY PAINT the same as the former, at three-fourths the price.
HUBBUCK'S PATENT WHITE ZINC PAINT is invaluable for Iron Ships and iron exposed to salt water; neither bilge water, nor noxious vapours from cargo, nor heat on funnels of Steam Vessels act upon it. Sold by the Wholesale Paint Dealers, in original packages, stamped, HUBBUCK, LONDON, PATENT; and when so marked the quality is guaranteed.
HUBBUCK'S COPPER COLOUR ENAMEL PAINT prepared expressly for the bottoms of Iron and Wood Steam Ships, a protection from rust and incrustation. Timber coated with this Enamel is not attacked by the worm, neither do barnacles attach to it.
Full particulars of THOMAS HUBBUCK and SON, Paint and Varnish Works, opposite the London Docks, London.
OLD ZINC AND ZINC CUTTINGS BOUGHT TO ANY EXTENT.

CHARLES RICHARDSON,
3 & 6, SOUTH-WHARF, PADDINGTON BASIN.
COWLEY AND KENT BRICKS,
PORTLAND, ROMAN, AND OTHER CEMENTS,
TAMWORTH GLAZED SEWAGE PIPES
BLUE VITRIFIED BRICKS, COPINGS, PIPES, &c.

3 & 6, South Wharf, Paddington.

NOTICE.

CHARLES RICHARDSON takes the earliest opportunity of informing Engineers, Architects, Contractors, and others, that he is now bringing GREAVES'S BLUE LIAS LIME per the Great Western Railway from Harbury to Bull's-bridge and Paddington, from whence it can be delivered alongside any part of the river Thames, canals, or railway stations in London the day after it is burnt and ground, in any quantity, and at a great reduction in price.
All applications for prices and terms will meet with prompt attention.
N.B. Please observe the lime is ground at the works, not in London.

GREY STONE LIME WHARFS,
12, UPPER GROUND-STREET, Blackfriars (Surrey side),
7, NORTH WHARF-ROAD, Paddington.
WILLIAM PETERS begs to inform the trade he is in a position to supply the best GREY STONE LIME in any quantities from the above wharfs, or per barge direct from the kilns.
Large Grey Stone, or Grey Chalk, free on board at Works, 8d. per ton.
Small ditto, ditto, 4d. per ton.
Barges loaded in a few minutes.
Wouldham-hall Grey Stone Lime Works, on the Medway, near Rochester.

NOTICE.

SOUTHAM HYDRAULIC BLUE LIAS LIME.
WILLIAM OLDHAM begs to inform those parties requiring genuine Hydraulic Blue Lias Lime, that he is prepared to deliver the best quality of ground and lump, into boats, at the Works.—Address, WILLIAM OLDHAM, Blue Lias Lime and Cement Works, Southam.

BLUE LIAS LIME.—Messrs. GREAVES and KIRSHAW having completed their Works on the Birmingham and Oxford Line of the Great Western Railway, at Harbury, are now prepared to supply LUMP and GROUND LIME of the best quality, direct from the kilns, to all the Stations on the Great Western Railway.—Greaves's Blue Lias Lime.—Portland, Bath, and Lias Cement.—Works, at Harbury, Stockton, and Wilmcote.—Office, at Warwick.

PLASTER of PARIS manufactured by T. P. BLYTH, Baldwin's-place, Gray's-inn-lane, Holborn. The trade and shippers supplied on advantageous terms. Roman and Keen's Cement, Tiles, Plasterers' Hair, Pan and Plain Tiles, Fire Goods, &c.

BRICKS of all kinds (clamp-burnt or kiln-burnt), Lime, Chalk, Chalk Rubbish for brick-making, Flints for building and pottery work, Foundry Loam, Whiting Whiting Sand for ashphalte, Land Drain Pipes, Patent Drain Pipes, Gas Soil for brick-making, &c. &c. sent by barge from Messrs. MEESON and CO.'S works at Grays, Essex, to any part of the Thames, the various canals, the river Lea, &c. or by rail to any station on the London and Southend and Eastern Counties lines, or any railway connected with them. Vessels of 300 to 600 tons can load alongside the wharves at Grays. At MEESON and CO.'S wharf and kilns, Bow-bridge, Stratford, Essex, the above-named articles can also be procured, as well as all kinds of fire goods (both Welsh and Newcastle), Fire-clay, Flare-burnt Lime, and Marble and Temper Lime; and here lime is packed in hogsheads, casks, jars, &c. for exportation.
General Office—No. 12, GEORGE-YARD, LOMBARD-STREET.
Letters addressed to Grays Essex, will meet with immediate attention.

BRICKS.—Malm Cutters, Yellow and Pale Seconds, Paviors, and Pickings of good and sound quality, constantly on sale at H. DODD'S Brickfields, which are only a quarter of an hour's walk from the City. H. D. earnestly requests purchasers to favour him with a visit, in order to inspect his stock and to judge for themselves.
Malm Place, half-washed Stocks, and Place Bricks, also on sale. These bricks are sound, well burnt, and unusually free from defects; a very large proportion of the stock being suitable to external facing.
Apply to HENRY DODD and CO. at the Counting-house, Hoxton Brickfields, Grange-walk, near the Rosemary Branch, Hoxton.
N.B. Light-coloured Pit Sand of approved quality constantly on sale upon reasonable terms. This Sand, from its not containing any saline matter, is acknowledged to be preferable to river sand.

THE BEST HERTFORDSHIRE MALM SECONDS;
THE BEST WHITE SUFFOLK and RED FACINGS:
WHITE SUFFOLK PERFORATED BRICKS;
DEEP-RED RUBBING BRICKS.
Also COWLEY and KENT STOCKS, in any quantities.
J. EASTWOOD and SONS, Belvidere-road, Lambeth; and Surrey-canal-bridge, Old Kent-road, Surrey.

BRICK-FIELDS, QUEEN'S-ROAD, PECKHAM, SURREY
(Within a short distance of the five bridges).
THE BEST MALM-CUTTERS, SECONDS, PICKINGS, and PAVIORS, in any quantity.
Also, STOCKS, of FIRST QUALITY.
J. EASTWOOD and SONS, Belvidere-road, Lambeth.

BRICKS.—Mr. Rydon having made more bricks than he requires for the builders on his estate, Highbury New-park, would be willing to enter into arrangements with builders and others for supplying first-class STOCK and RED BRICKS upon advantageous terms.—For particulars, apply at the Estate Office, Dell's Farm, Stoke Newington Green.

THE PATENT BRICK MACHINE COMPANY invite orders for their IMPROVED MACHINES. One of them is working in a field at Caterham, near Croydon, and arrangements are made with the owner for bearers of a letter from the Secretary, to see it in operation every Thursday and Friday. It is the most simple machine invented. Trains from London-bridge to Warlingham (close to the field), leave at 6 and 9·30 a.m. and 3 p.m.; return at 9·55 a.m. and 5·5 and 7·35 p.m.
HENRY C. MOUNT, Sec.
37, King William-street, City.

ROUPELL-PARK BRICKFIELDS, LOWER NORWOOD, SURREY. Entrance, Norwood end, Palace-road.—BRICKS of the first class. Red Kiln Bricks Cutters, Dressings, Facings, and Paviors, Clamped ditto, Yellow and Pale, Seconds, Paviors and Pickings, Washed Stocks, Stocks, and Place.—Apply to TRUMAN and CO. Norwood Lodge, Palace-road, Roupell-park, Lower Norwood, Surrey.

11, George-yard, Lombard-street, City.

ON SALE, 3,000,000 PLACE BRICKS, of good quality, for cash or approved bills. Immediate delivery.—Apply to G. BOOTH, Agent, as above.

BEADON'S EAVES GUTTER TILES.—Mr. LAWES is prepared to CONTRACT for the ERECTION of the above TILES on roofs of all descriptions, in the neighbourhood of London, at 7d. per foot; above 100 feet, 6d.—Office, 1, Adelaide-place, London-bridge.

BEADON'S PATENT IMPERISHABLE GUTTER-TILES,
For Spouting Roofs of Houses (either old or new, whether of thatch, slate, or tile), and other structures.
SOLE AGENT,
J. B. LAWES, 1, Adelaide-place, London-bridge.
This is the cheapest kind of spouting known; for, besides its lower cost, it will last without paint or repair as long as the building itself. It will bear the weight of any ladder; and in case of accident a labourer can repair it. It occupies the room of a large amount of roofing, effecting a great saving in slates, tiles, &c. It is especially applicable to the backs of houses in town, cottages, and agricultural buildings.
Price 4d. each tile of about 13 inches long; stop-ends and outlets, 6d. Any mason can put them up, or, if over 100 feet are required, a man will be sent to fix them at 6d. per foot. This charge to include tiles (delivered in Agent's yard), cement, and labour. May be had in London, Gloster, Bridgwater, and Rugby.

PEAKE'S TERRO-METALLIC TILES, PIPES, &c.—Notice is hereby most respectfully given, that the LONDON DEPOT for this WARE is REMOVED to No. 21, WHARF, Macclesfield-street North, City-road Basin. Secondly, that the trade term, "TERRO-METALLIC," is the exclusive right of the Proprietor; and, thirdly, that the "REPORTS OF THE JURIES," page 581, of the Great Exhibition, rank the Manufactories known so long as "The Tileries," Tunstall, Staffordshire, as the first of the kind in the world.

PANTILES, PAVINGS, &c.—J. H. ANDREWS, Wisbeach, Cambridgeshire, begs to offer pantiles at 52s. 6d. per 1,000; floor bricks and 6-inch pavings, at 37s. 6d. per 1,000; 8-inch pavings, at 57s. 6d. per 1,000; plain tiles, at 35s. per 1,000, delivered. Cash prices.—Delivered on trucks in London on Eastern Counties Railway.

H. and R. HAYWOOD, Brownhills Blue Metallic Tileries, near Burslem, Staffordshire; London Depôt, 15, South Wharf, Paddington, Manufacturers of Improved Plain and Ornamental Roofing, Ridge, and Flooring Tiles, for Churches, &c.; also Metallic Plain and Socket Sewerage Pipes, &c. adapted for Sanitary and Railway purposes. They are extensively used on the London and North Western, Great Western, Trent Valley, North Staffordshire, and other Lines of Rail, and highly approved. Warranted imperishable, and to resist all acids and exhalations.
*** A FIRST-CLASS MEDAL was awarded to H. and R. HAYWOOD, by the Jury of the GREAT EXHIBITION.

WILLIAM GILBERT, Manufacturer of all kinds and colours of Tiles, Quarries, Drain-pipes, Moulded Bricks, Brackets, Vases, Chimney-pots, Stoneware Glazed Sewerage Pipes, Ornamental Quoin Blocks, &c.
Tividale, Staffordshire.

MACINTOSH INDIA-RUBBER WAGGON COVERS, at reduced prices. Stocks of different sizes are always ready, and can be inspected at our Warehouse, MOSES, SON, and DAVIS, 14 and 15, Aldgate High-street, and at the Factory, India-Rubber Steam Works, Bow-common.

DURABILITY of GUTTA PERCHA TUBING.—Many inquiries having been made as to the Durability of Gutta Percha Tubing, the Gutta Percha Company have pleasure in giving publicity to the following letter:—FROM SIR RAYMOND JARVIS, Bart., VENTNOR, ISLE of WIGHT.—Second Testimonial.—"March 10th, 1853.—In reply to your letter, received this morning, respecting the Gutta Percha Tubing for Pump Service, I can state, with much satisfaction, it answers perfectly. Many Builders, and other persons, have lately examined it, and there is not the least apparent difference since the first laying down, now several years, and I am informed that it is to be adopted generally in the houses that are being erected here."
N.B. From this Testimonial it will be seen that the CORROSIVE WATER of the ISLE of WIGHT has no effect on Gutta Percha Tubing.
THE GUTTA PERCHA COMPANY, PATENTEES,
18, WHARF-ROAD, CITY-ROAD, LONDON.

HANCOCK'S PATENT VULCANIZED INDIA-RUBBER TUBING, HOSE-PIPES, WASHERS, ENGINE-PACKING, both round and flat, and SOCKET-RINGS, for Hot-water-pipes. Vulcanized Rubber Door-springs, and Solid Round Rubber Cord of all sizes of any length. Billiard Cushions and Rubber Strips cut to any pattern for bagatelle tables.
Diving-dresses of superior make, and improved Vulcanized Rubber Supply-pipes for ditto.
Vulcanized Rubber, in sheets, from three to four feet wide, and of any thickness. Air-beds, Pillows, and Cushions inflating Portable Baths, Invalid Cushions, and Articles of this kind made to any pattern to order.
N.B. All communications and orders punctually attended to, addressed to the Manufactory, JAMES LYNE HANCOCK, Goswell-mews, Goswell-road, London.